



## **BW Technologies by Honeywell Instrument Repair**



**Honeywell**

# General Repair Guidelines

- Prior to returning a monitor to customer always
  - Calibrate
  - Bump and check for stability
- By rules of intrinsic safety
  - NO SOLDERING permitted
- Sensor Warranties
  - $\text{NH}_3$ , ETO,  $\text{ClO}_2$ ,  $\text{Cl}_2$ ,  $\text{O}_3$ , sensors carry 1 year warranty
  - 3 year Clip Extremes have a 3 year warranty
  - All others are 2 year
- Corroded monitors are not covered by warranty
  - Not to be repaired
  - Owner must buy new replacement

# Universal Repair Tips

Honeywell

- If monitor display is missing segments
  - Clean zebra strips
- Replace sensor if
  - Sensor shows fail
  - Fails to bump and calibrate
  - Values constantly float up and down
- If unit has erratic toxic sensor
  - Try airing out over a weekend and then recalibrating
  - Often fixes poisoned sensors
- When reassembling a monitor
  - Always turn counter clockwise until a click is felt then tighten
  - If monitor has more than three stripped screws replace case
- 180 days is default calibration interval for GasAlert Family

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# Factors Affecting Battery Life

- Amount of time unit is in alarm
- How often backlight is used
- Operating Temperature
  - Colder temperatures significantly shorten battery life
- Age of rechargeable battery
- Initial charge/discharge cycle
  - Rechargeable batteries should be fully discharged then fully charged again 3 times to ensure maximum life

# Monitor Cleaning

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- Approved cleaners for BW monitors
  - ACL Staticide
  - Warm water
  - Do not use any other cleaners such as Econoclean citrus-based cleaners or Armor All
- To clean monitor
  - Apply cleaner of choice to clean cloth and wipe unit clean
- Avoid exposing sensors screens to cleaning liquid



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# Passcodes

MicroDock2	532
GasAlertExtreme	871
GasAlertMicro	898
GasAlertMicro5	1007
FleetManager2	Admin

# Products

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# GasAlertMicro 5

Honeywell

- GasAlertMicro 5
  - Full-featured multiple gas detector
  - Ideal for
    - Confined Space
    - HAZMAT
    - Fire Service
    - Homeland Security
  - Simultaneous detection of up to five hazards
    - O2, LEL and a wide selection electrochemical toxic sensors
      - H2S
      - CO
      - SO2
      - PH3
      - NH3
      - NO2
      - HCN
      - Cl2
      - ClO2
      - O3



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# GasAlertMicro 5

Honeywell

- Key Features

- Integral motorized pump
  - Easy to remove or install
- Integral concussion-proof boot
- Highly water resistant
- Large easy to read display
- Extended list of user options
- Interchangeable rechargeable and alkaline battery packs



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# GasAlertMicro 5 PID Correction Factors

Honeywell

**Correction factors**  
(LEL and PID only)

Mathematical correction  
of sensor to correct  
sensitivity for targeted  
gases

**PID:**

Acetaldehyde  
Acetone  
Ammonia  
Benzene  
Butadiene  
Diesel fuel  
Ethanol  
Ethylene  
Gasoline  
Hexane  
Isobutylene  
JP-8 jet fuel  
Kerosene  
Methyl ethyl ketone  
Naptha  
Styrene  
Toluene  
Turpentine  
Vinyl chloride  
Xylene  
Custom (0 to 15.0)

**CF relative to:**  
Isobutylene

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# GasAlertMicro 5 Sensor Positions

Honeywell

## SENSOR PLACEMENT

- **Oxygen Sensor (Red)**  
Dummy sensor (empty)  
O<sub>2</sub>
- **Combustible Sensor (Green)**  
Dummy sensor (empty)  
LEL (combustible)
- **Interchangeable Toxic 1 Sensor (Blue)**  
Dummy sensor (empty)  
H<sub>2</sub>S  
CO  
SO<sub>2</sub>  
Cl<sub>2</sub>  
ClO<sub>2</sub>  
NH<sub>3</sub>  
PH<sub>3</sub>  
HCN  
NO<sub>2</sub>  
O<sub>3</sub>
- **Interchangeable Toxic 2 Sensor (Yellow)**  
Dummy sensor (empty)  
COSH-TwinTox (CO/H<sub>2</sub>S sensor)  
H<sub>2</sub>S  
CO  
SO<sub>2</sub>  
Cl<sub>2</sub>  
ClO<sub>2</sub>  
NH<sub>3</sub>  
PH<sub>3</sub>  
HCN  
NO<sub>2</sub>  
O<sub>3</sub>



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# GasAlertMicro 5 PID Sensor Positions

Honeywell

- Micro 5 PID instruments may ONLY have PID sensor installed in Toxic 1 position

## GasAlertMicro<sup>5</sup> PID

### SENSOR PLACEMENT

- Oxygen Sensor (Red)  
Dummy sensor (empty)  
O<sub>2</sub>
- Combustible Sensor (Green)  
Dummy sensor (empty)  
LEL (combustible)
- Interchangeable Toxic 1 Sensor (Blue)  
Dummy sensor (empty)  
PID
- Interchangeable Toxic 2 Sensor (Yellow)  
Dummy sensor (empty)  
COSH - TwinTox (CO/H<sub>2</sub>S sensor)  
H<sub>2</sub>S  
CO  
SO<sub>2</sub>  
Cl<sub>2</sub>  
ClO<sub>2</sub>  
NH<sub>3</sub>  
PH<sub>3</sub>  
HCN  
NO<sub>2</sub>  
O<sub>3</sub>



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# GasAlertMicro 5 IR Sensor Placement

Honeywell

## GasAlertMicro<sup>5</sup> IR

### Sensor Placement

- **Oxygen Sensor (Red)**  
Dummy sensor  
O<sub>2</sub>
- **Combustible Sensor (Green)**  
Dummy sensor  
LEL (combustible)
- **Interchangeable Toxic 1 Sensor (Blue)**  
Dummy sensor (empty)  
CO<sub>2</sub> (Infrared Carbon Dioxide)
- **Interchangeable Toxic 2 Sensor (Yellow)**  
Dummy sensor (empty)  
COSH -TwinTox (CO/H<sub>2</sub>S sensor)  
H<sub>2</sub>S  
CO  
SO<sub>2</sub>  
NH<sub>3</sub>  
O<sub>3</sub>



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# GasAlertMicro 5

Honeywell

- Standard Unit includes
  - Monitor as specified
  - Sensors as specified
  - Sensor compartment cover for diffusion operation
  - Calibration adapter and hose
  - Quick reference guide
  - Interactive training and technical documentation CD
  - Integral concussion-proof boot
  - “Hot Swappable” Alkaline battery tray with set of 3 AA alkaline batteries



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# GasAlertMicro 5

Honeywell

- Rechargeable instruments additionally include
  - “Hot-Swappable” sealed rechargeable Lithium Polymer battery pack
  - Slip-in charger cradle with 120/230 VAC/DC Wall Adapter with US style plug
    - Multiple cradle chargers can be “ganged: together on a single mounting plate
    - Can be mounted to wall or vehicle with screws



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# GasAlertMicro 5

Honeywell

- Pump equipped units additionally include
  - Motorized pump (installed)
  - 12 inch sample probe with spare filters
  - 10 foot Teflon lined sample tubing



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# GasAlertMicro 5 Pump

Honeywell

- Pump will enter alarm when blocked
- If long sample hose is connected
  - Pump speed increases to compensate
- Gas vents out pump side
- Pump flow rate approx 350ml/Min
- Maximum remote sampling distance up to 10/60 feet from source



**NEW**

Generation 2 pump  
with visible integrated filter

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# GasAlertMicro 5

Honeywell

- Datalogging instruments additionally include
  - 64 MB Multi-Media Flash Card (MMC)
  - BW Fleet Manager software
    - For downloading, evaluating and archiving monitoring results
    - Fleet Manager replaced EDM for Micro 5



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# GasAlertMicro5 Calibration

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## GasAlertMicro 5 - Calibration

Procedure	Display	Procedure	Display	Procedure	Display
1. In a clean atmosphere, press and hold  and  simultaneously (as the detector beeps and flashes to the corresponding countdown) to enter calibration. The display then reads <b>Starting calibration</b> .		4. This option allows the user to select which sensor to span. Use  and  to scroll to a sensor and press  to deselect it.  Sensors should be spanned in the following order: exotics (NH3, ClO2, O3, and Cl2), single gas, quad gas (H2S, CO, O2, and LEL), and lastly PID.		7. Press  or  to change the calibration due date and press  to accept this value and proceed to the next due date. (If a sensor failed or did not span, you cannot change the calibration due date for that sensor.)  The display then advises to press  to set or  to bypass the alarm setpoints.	
2. <b>AUTO-ZERO</b> flashes while the detector zeroes all of the sensors and calibrates the oxygen sensor. If a sensor failed to auto zero, it will bypass the span.		5. Attach the calibration cap and apply gas at a flow rate of 500 ml/min.  flashes as the unit senses which gas is being applied.  After 30 seconds, <b>AUTO-ZERO</b> flashes and a countdown appears while the unit completes the span.		8. Press  or  to change the alarm setpoint and press  to save the displayed value and proceed to the next setpoint. Set the remaining setpoints. The detector beeps twice at the end of the alarm setpoint stage.	
3. Next, the following three screens appear: - <b>Apply span gas now to calibrate</b> - or press  to select sensor(s) - or press  to skip calibration If no button is pressed, proceed to step #5. If  is pressed, go to step #4. If  is pressed, go to the end of step #6.		6. Once span is complete, the following three screens appear: - <b>Calibration successful</b> - Press  to apply a new cal gas - Press  to end span Repeat steps #3-6 to calibrate the remaining sensors.  The display then advises to press  to set or  to bypass the calibration due dates.		9. <b>Saving calibration</b> is displayed to indicate that calibration is complete.  <i>Note</i> <i>The calibration cap should only be used during the calibration process.</i>	

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# GasAlertMicro5 Calibration Notes

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- If calibrating with Chlorine
  - Use a 1LPM regulator with no more than 5cm of hose
  - Always calibrate chlorine **after** H<sub>2</sub>S
- When prompted to zero CO<sub>2</sub> sensor
  - Use nitrogen **not** fresh air
- Do not use LEL correction factors unless monitor is calibrated to methane
- Check user options to ensure spans match calibration gas
- If toxic 2 sensor or 9 o'clock sensor is ammonia, chlorine, chlorine dioxide or ozone use single gas calibration cap
- NH<sub>3</sub> and SO<sub>2</sub> cannot be present in same instrument
  - Call for assistance if you encounter a unit in this configuration

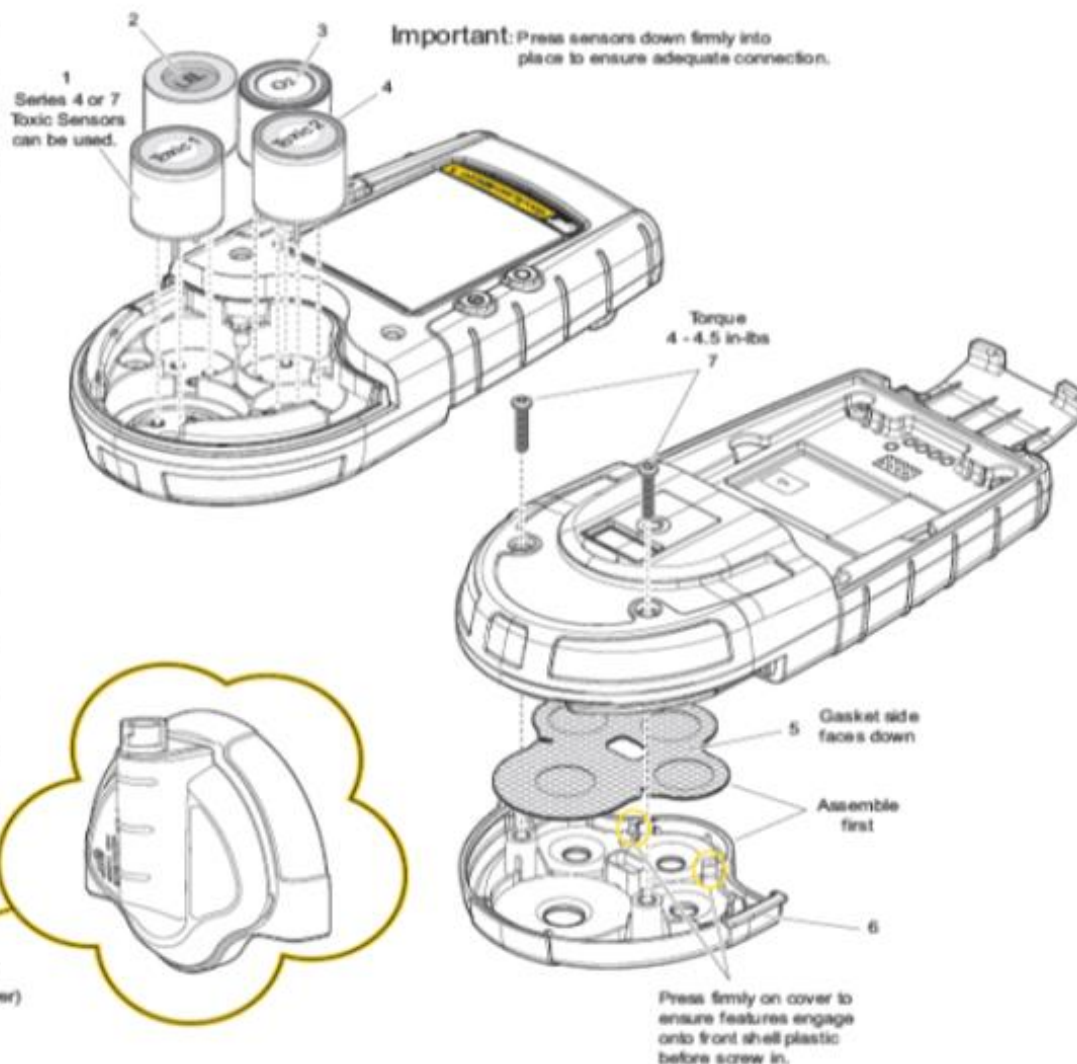
Rev 1



# Basic Assembly

Honeywell

GasAlertMicro 5 - Assembly Procedure			
Doc Rev:	A	Sheet	4 of 6
Order#	Item	Qty	Description
See Page 10 Replacement Sensors	1	1	Toxic Sensor #1 - 4 Series or Toxic 7 Series Sensor
See Page 10 Replacement Sensors	2	1	LEL Sensor
See Page 10 Replacement Sensors	3	1	Oxygen Sensor
See Page 10 Replacement Sensors	4	1	Toxic Sensor #2
M5-DC-1	5	1	Gasket - Sensor Gasket, GasAlertMicro 5
	6	1	Sensor Cover, Yellow, GasAlertMicro 5
	7	2	Screw - #4-40 x 3/4" machine screw, stainless steel, phillips



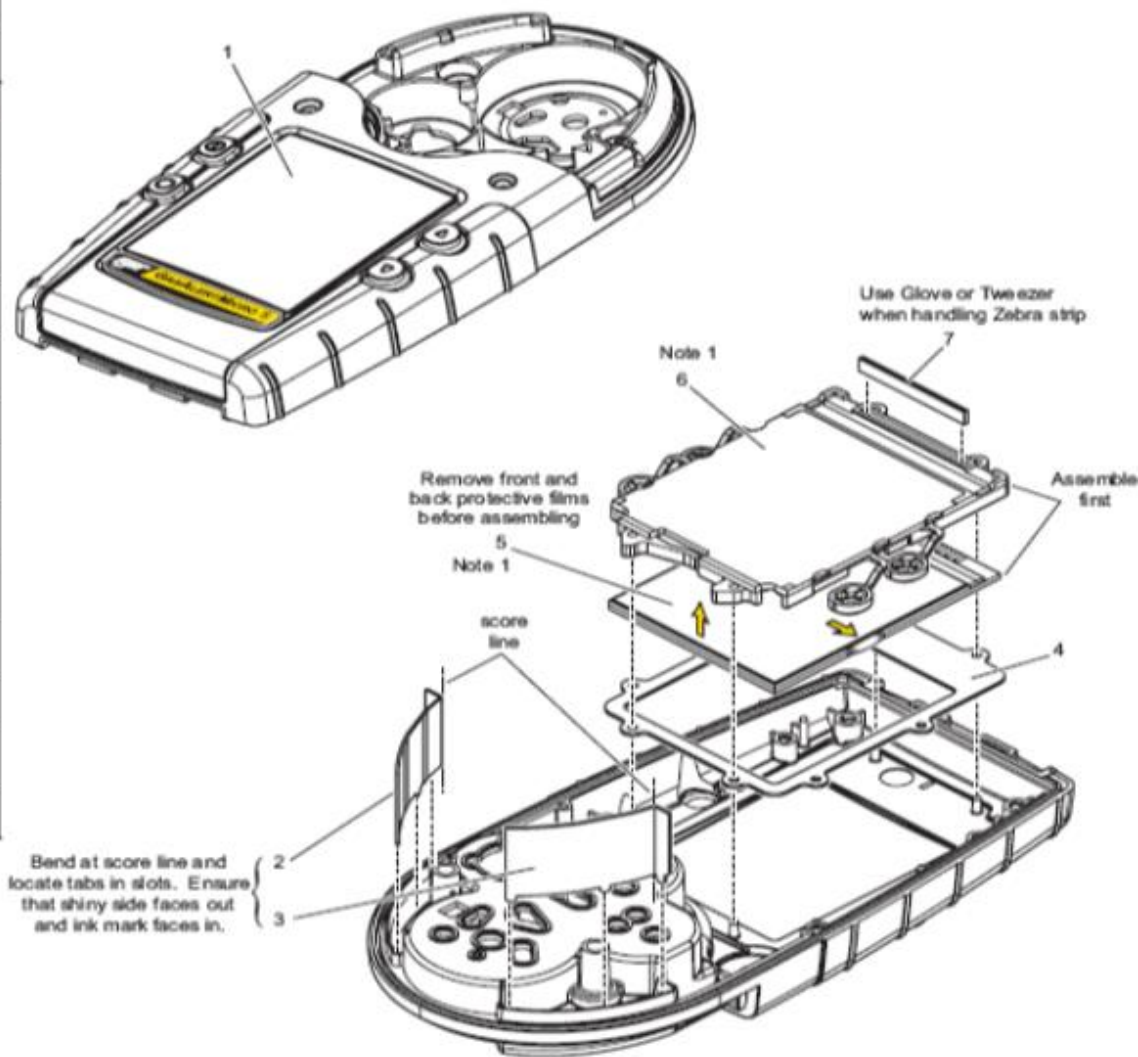
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# Advanced Assembly - Part 1

**Honeywell**

[illegible]

Note 1: Remove the protective film from the LCD. Dust off the interior of the casing and both sides of the LCD and LCD bracket with air duster before assembly.

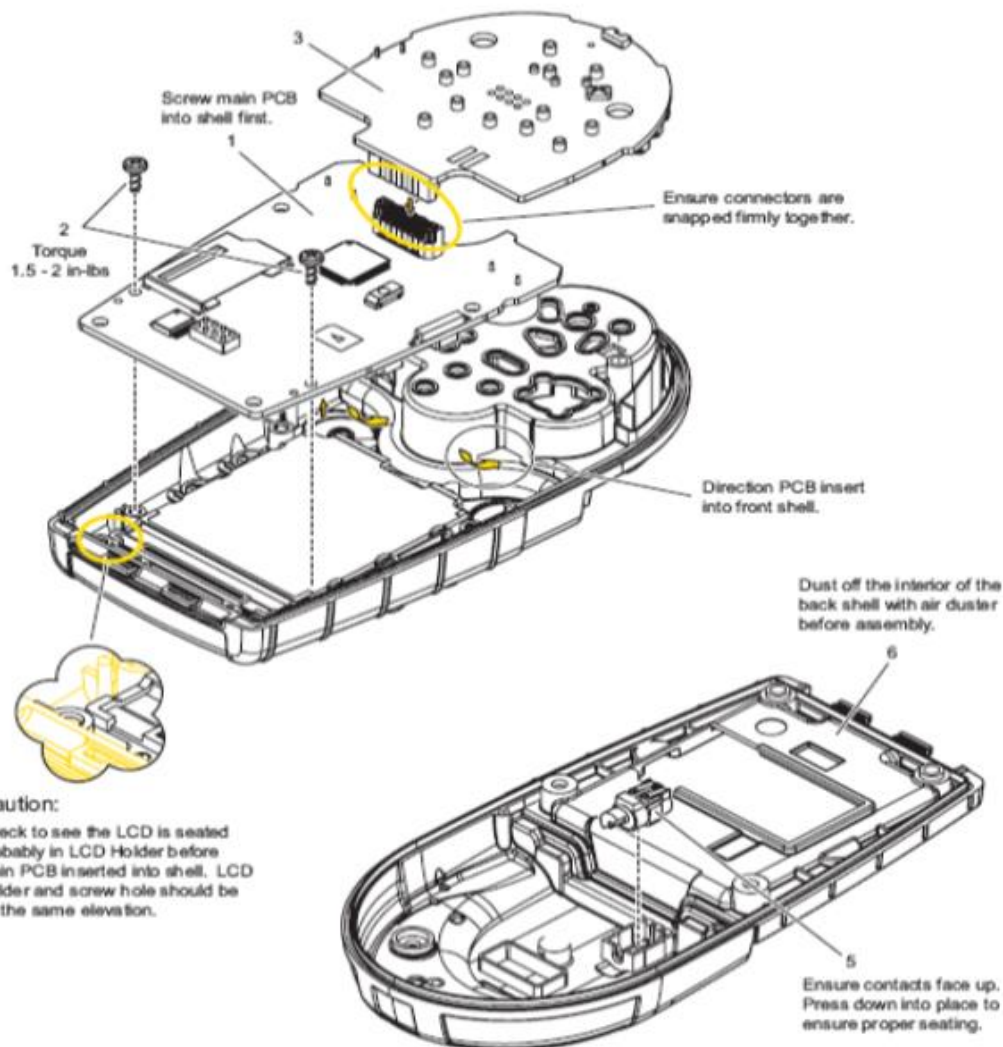
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# Advanced Assembly - Part 2

**Honeywell**

[illegible]

**Caution:**  
Check to see the LCD is seated  
probably in LCD Holder before  
main PCB inserted into shell. LCD  
Holder and screw hole should be  
on the same elevation.

Rev 1

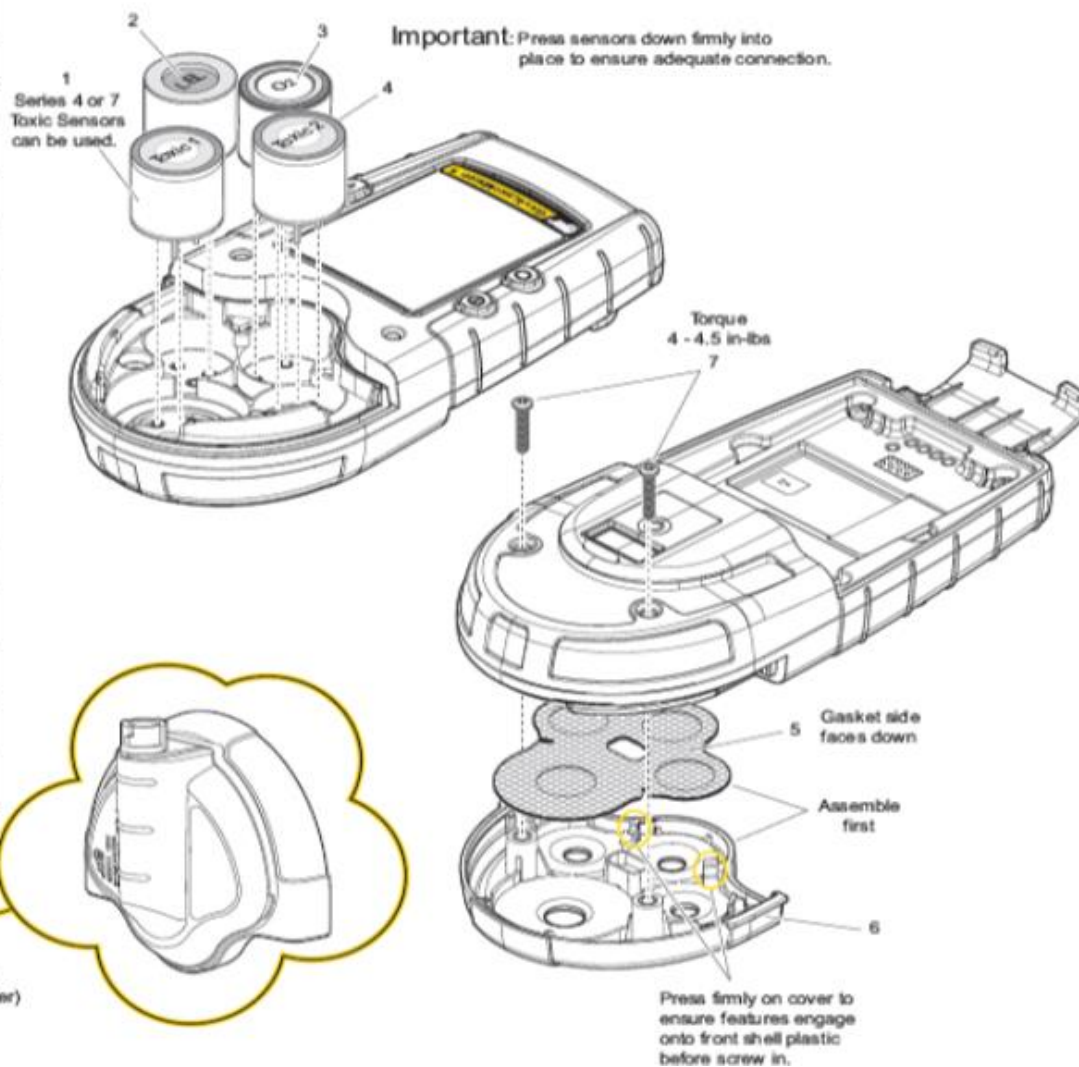




# Advanced Assembly - Part 4

Honeywell

GasAlertMicro 5 - Assembly Procedure			
Doc Rev.	Sheet		
A	4 of 6		
Order#	Item	Qty	Description
See Page 10 Replacement Sensors	1	1	Toxic Sensor #1 - 4 Series or Toxic 7 Series Sensor
See Page 10 Replacement Sensors	2	1	LEL Sensor
See Page 10 Replacement Sensors	3	1	Oxygen Sensor
See Page 10 Replacement Sensors	4	1	Toxic Sensor #2
M5-DC-1	5	1	Gasket - Sensor Gasket, GasAlertMicro 5
	6	1	Sensor Cover, Yellow, GasAlertMicro 5
	7	2	Screw - #4-40 x 3/4" machine screw, stainless steel, phillips

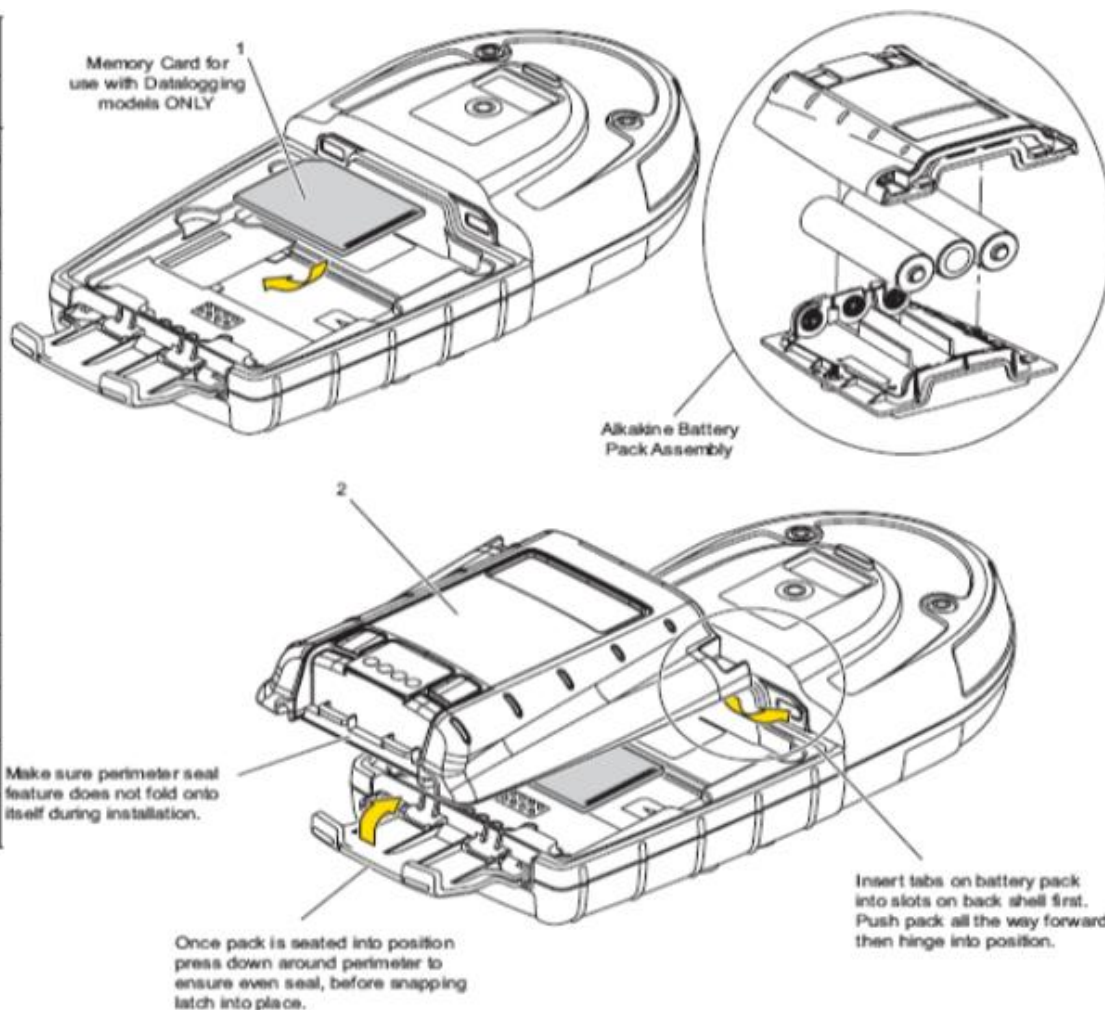


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# Advanced Assembly - Part 5

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[illegible]

Insert tabs on battery pack into slots on back shell first. Push pack all the way forward then hinge into position.

Once pack is seated into position press down around perimeter to ensure even seal, before snapping latch into place.

Make sure perimeter seal feature does not fold onto itself during installation.

# Replacement Parts

Honeywell

Description	Part Number
Yellow Front Enclosure	M5-FC1
Black Front Enclosure	M5-FC1B
Yellow Rear Enclosure	M5-BC1
Black Rear Enclosure	M5-BC1B
Yellow Diffusion Cover	M5-DC-1
Black Diffusion Cover	M5-DCB-1
Yellow Replacement Pump	M5-PR-1
Black Replacement Pump	M5-PRB-1
Replacement LCD screen	M5-LCD-K1
Kit of 5 sensor screens	M5-SS
Replacement Datalogging card	M5-MMC
Firmware upgrade kits (includes all 3 streams)	M5-MMC-UPGRADE
Sample Probe	

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# Replacement Parts

Honeywell

Sensors			
Description	Part Number	Description	Part Number
H2S Sensor	PS-RHO4S	O3 Sensor	SR-GO4
CO Sensor	PS-RM04	SO2 Sensor	PS-RS04
Cl2 Sensor	PS-RC10	CO & H2S Sensor*	D4-RHM04
ClO2 Sensor	SR-VO4	PID/VOC Sensor**	SR-Q07
NH3 Sensor	SR-A04	IR/CO2 Sensor***	SR-B04
PH3 Sensor	SR-P04	O2	SR-X10
HCN Sensor	PS-RZ10	LEL/Combustible Standard	SR-WO4
NO2 Sensor	PS-RD04	LEL/Combustible Unfiltered	SR-W04-SF
Pump Accessories			
Yellow pump	M5-PR1	Pump Filter	
Black pump	M5-PRB1	Pump nozzle	

\*Only fits in position 2

\*\*Only compatible with M5PID position 1

\*\*\*Only compatible with M5IR position 1

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# Replacement Batteries

**Honeywell**

Description	Compatible Serial Number Prefix	Part Number
Yellow Rechargeable Battery pack, for current M5	SS3, SK3, SE3, SS1	M5-BAT08
Black Rechargeable Battery pack, for current M5	SS3, SK3, SE3, SS1	M5-BAT08B
Yellow Alkaline Battery pack, for current M5	SS3, SK3, SE3, SS1	M5-BAT0501
Black Alkaline Battery pack, for current M5	SS3, SK3, SE3, SS1	M5-BAT0501B
Yellow Rechargeable Battery pack for older M5 & M5PID	SK1, SE1	M5-BAT07
Black Rechargeable Battery pack for older M5 & M5PID	SK1, SE1	M5-BAT07B
Yellow Alkaline Battery pack, for older M5 & M5PID	SK1, SE1	M5-BAT02
Black Alkaline Battery pack, for older M5 & M5PID	SK1, SE1	M5-BAT02B

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# Replacement Circuit Boards

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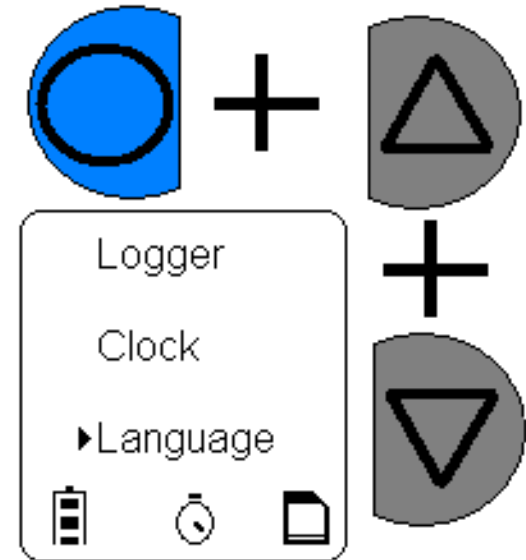
Description	Compatible Serial Number Prefix	Part Number
Main PCB for newer M5 and all M5IR	SS3, SK3, SE3	M5-MPCB3
Main PCB for older M5PID	SK1	M5PID-MPCB1
Main PCB for older M5	SE1	M5-MPCB1
Sensor PCB for M5IR	SS1, SS3	M5IR-SPCB1
Sensor PCB for newer M5	SE3	M5-SPCB3
Sensor PCB for newer M5PID	SK3	M5PID-SPCB3
Sensor PCB for older M5	SE1	M5-SPCB1
Sensor PCB for older M5PID	SK1	M5PID-SPCB1

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# Technician Mode

Honeywell

- Use Tech Mode to
  - Change toxic sensor configuration
  - Reset monitor
  - Enable stealth
  - Bump daily and force cal
- Note
  - IR, PID and toxic sensors are not interchangeable
- To activate techmode
  - Go to user options and select language
  - Press down+up+blue or “DUB”
    - Press down first when pressing all three



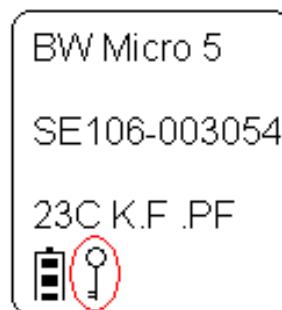
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# Factory Mode

- When second screen appears press



- When key icon appears
  - Press following sequence with a 1 second cadence



# Using Factory Options

- Serial Numbers
  - Use when replacing main circuit boards
- Datalogging
  - Enable/disable
    - MMC card is required to work
    - Upgrading costs \$200
- MicroDock
  - Enables/disables dock functionality
- Rebirth
  - Set to disabled
- Initialize
  - Factory reset
    - Use when sensors will not zero
- Do not touch any other options

# Replacing or Changing Sensors

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**Honeywell**

- Remove two bolts near alligator clip
- Remove pump or diffusion cover
- Remove problem sensor
- Install new
- Power up and calibrate

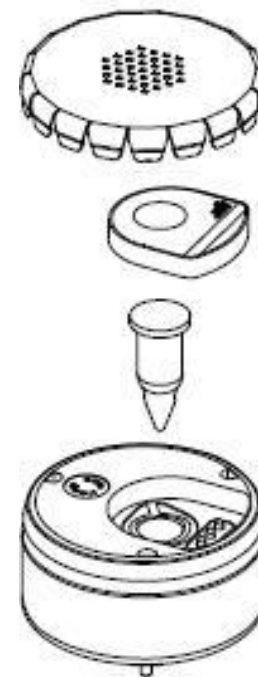
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# PID Sensor Repair

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- When PID sensor fails
  - Clean lamp
  - Replace electrode stacks
  - Replace lamp
    - Carries one year warranty
  - If all else fails replace sensor



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- Current Firmware Versions

Serial Number Prefix	Firmware Version
SS1	23i
SE1 and SK1	23c
SS3, SE3 and SK3	37

Ex: SK106-003054

- Updating Firmware

- Use chart to determine correct firmware version
- Ensure rechargeable batteries are fully charged or new alkaline batteries
- Remove datalogging memory card
- Install upgrade memory card
- Turn on monitor and enter passcode 1007
- Press blue button and allow upgrade to complete
- Remove upgrade memory card and re-install datalogging memory card



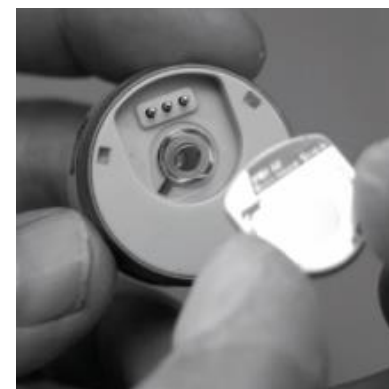
# PID Cleaning and PID Disassembly

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- If lens surface is scratched or contaminated
  - Sensor sensitivity will be greatly reduced

Detector Usage	Cleaning Frequency
Daily use (40 hrs/wk)	Every 60 days
Infrequent use (10 hrs/wk)	Every 90 days

Note: If sensor sensitivity decreases such as ppm levels lower than expected after calibration, clean UV lamp immediately.



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# M5 Repair Tips

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Problem	Repair
CO2 shows negative	Properly zero sensor using pure N2
Monitor keeps failing PID even with new sensor	Replace sensor board
Monitor clicks instead of starting up or does not start up at all	Remove PID sensor (can happen to any M5), replace LCD Screen
Battery pins don't properly make contact	New Main PCB
M5 Fails Different sensors every time I bump it in the dock	Install diffusion adapter in dock module
CO and H2S are always drifting	Install an M5-BAT07/M5-BAT08 or charge battery separate from detector or use initialize in tech mode to clear all calibration data
Monitor Fails audible but seems to still be ringing	One buzzer is likely broken, mute buzzers with your thumb to see if this is the case
Pumps are always failing	Try new pump

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# M5 Convergence

- M5 will use BAT-08 rechargeable and bat-05 for alkaline
- Older M5 PID batteries and M5tox batteries are not forward compatible
- Older M5IR batteries are forward compatible
- Firmware running on M5 convergence is 28DA
- PID failing issues have been resolved with new firmware and hardware
- All GasAlertMicro5 units will be made using convergence platform
- Older PCBs not inter-compatible with convergence PCBs



# Convergence Battery Considerations

Honeywell

- Batteries from Pre-Convergence M5 Toxic and M5PID units are not forward compatible
- Batteries from Pre-Convergence M5IR units are forward compatible with Convergence based units
- Chargers are still universal
- Batteries compatible with the Convergent M5s are:  
M5-BAT08(Lithium Polymer) AND M5-BAT05(Alkaline)
- Batteries compatible with the Pre-Convergent M5s are:  
M5-BAT07 (Lithium Polymer) AND M5-BAT02 (Alkaline)

# BW Sampler

Honeywell

- Designed for use with single and multi-gas detectors
  - Sampler is a motorized pump allowing remote sampling capabilities to be added to any diffusion instrument
  - Sampler is an excellent choice for a multitude of applications and industries, including pre-entry and continuous confined space work
  - Available as its own kit, or as part of a Confined Space Kit with any compatible instrument
- Quick and easy compliance - automatically maintain accurate records
- Sample gas from remote locations
- Leak test ensures clean and proper draw
- Easily compatible with all BW diffusion units
- Continuous self-test ensures proper functionality
- Up to 30 hrs continuous operation on AA alkaline or rechargeable NiMH batteries
- Built-in water trap and particulate filters
- Manual flow block test at start up verifies performance



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# Manual Aspirator Kit

Honeywell

- Manual Aspirator kit includes
  - Manual Aspirator Bulb
  - BW Sample Probe
  - Calibration cap
  - 10 feet of tubing



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# Single Gas Monitors

Honeywell



Zero-Maintenance

Single-Gas



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# GasAlert Extreme

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Datalogging now standard  
on all new units

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# GasAlert Extreme

Honeywell

- Features

- High-contrast LCD shows real-time gas concentration
- LOW, HIGH, TWA and STEL alarm set points
- Backlight
  - Auto, in alarm only
  - STEALTH (none)
- Simple auto zero and auto calibration with diagnostics protection
- High-output 95dB audible alarm
- Wide-angled visual alarm bars
- Records and displays on demand TWA/ STEL and peak exposures to gas encountered
- Continuous instrument status advice



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# GasAlert Extreme

Honeywell

- Internal clock to manage calibration dates.
- “Calibration Due” on start up
- STEALH mode. On/off
- Latching alarms . On/off
- Settable STEL period. 5-15 minutes.
- Backlight. On/off. In alarm only.
- Password Function. On/off
- Low, high, TWA and STEL alarms.
- Multi language and data logging



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# Available Models

Honeywell

<b>GasAlert Extreme</b>	Measuring Range	Order Number
H <sub>2</sub> S	0-100 ppm	GAXT-H-DL
H <sub>2</sub> S (extended range)	0-500 ppm	GAXT-H-2-DL
CO	0-1000 ppm	GAXT-M-DL
CO (H <sub>2</sub> resistant)	0-1000 ppm	GAXT-M2-DL
O <sub>2</sub>	0-30.0%	GAXT-X-DL
SO <sub>2</sub>	0-100 ppm	GAXT-S-DL
Cl <sub>2</sub>	0-50.0 ppm	GAXT-C-DL
HCN	0-30.0 ppm	GAXT-Z-DL
NO <sub>2</sub>	0-99.9 ppm	GAXT-D-DL
NH <sub>3</sub>	0-100 ppm	GAXT-A-DL
NH <sub>3</sub> (extended range)	0-400 ppm	GAXT-A2-DL
PH <sub>3</sub>	0-5.0 ppm	GAXT-P-DL
O <sub>3</sub>	0-1 ppm	GAXT-G-DL
ETO	0-100 ppm	GAXT-E-DL
NO	0-250 ppm	GAXT-N-DL
ClO <sub>2</sub>	0-1 ppm	GAXT-V-DL

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# Datalogging

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- IR Data Link. Works with Gas Alert Clip Extreme and GasAlert Extreme



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# Datalog Output Using EDM software

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Date + Time	Serial Number	Gas Type	Reading (ppm/%v)	STEL (ppm)	TWA (ppm)	Sensor Status	Unit Status	Pass Prote	STEL Period	Confidence Beep
4/22/2004 13:27:15	J304-M123456T	CO	35	0	0	TWA Alarm Setpoint		No	15	No
4/22/2004 13:27:15	J304-M123456T	CO	200	0	0	STEL Alarm Setpoint		No	15	No
4/22/2004 13:27:15	J304-M123456T	CO	35	0	0	Low Alarm Setpoint		No	15	No
4/22/2004 13:27:15	J304-M123456T	CO	200	0	0	High Alarm Setpoint		No	15	No
4/22/2004 13:27:15	J304-M123456T	CO	0	0	0		Calibration Due	No	15	No
4/22/2004 13:27:15	J304-M123456T	CO	1023	0	0		Last calibration	No	15	No
4/22/2004 13:27:15	J304-M123456T	CO	0	0	0		Manual shutdown	No	15	No
4/22/2004 13:27:57	J304-M123456T	CO	35	0	0	TWA Alarm Setpoint		No	15	No
4/22/2004 13:27:57	J304-M123456T	CO	200	0	0	STEL Alarm Setpoint		No	15	No
4/22/2004 13:27:57	J304-M123456T	CO	35	0	0	Low Alarm Setpoint		No	15	No
4/22/2004 13:27:57	J304-M123456T	CO	200	0	0	High Alarm Setpoint		No	15	No
4/22/2004 13:27:57	J304-M123456T	CO	0	0	0		Calibration Due	No	15	No
4/22/2004 13:27:57	J304-M123456T	CO	1023	0	0		Last calibration	No	15	No
4/22/2004 13:27:57	J304-M123456T	CO	0	0	0			No	15	No
4/22/2004 13:27:58	J304-M123456T	CO	0	0	0			No	15	No
4/22/2004 13:27:59	J304-M123456T	CO	0	0	0			No	15	No
4/22/2004 13:28:00	J304-M123456T	CO	0	0	0			No	15	No
4/22/2004 13:28:01	J304-M123456T	CO	0	0	0	Auto-zeroing		No	15	No

Rev 1



# Datalog Output Using EDM software

Honeywell

GasAlert Extreme Event Log:

Serial Number: J304-M123456T

Type of Exposure	Time Alarm Started	Time Alarm Ended	Peak Exposure
Peak Exposure	4/22/2004 1:36:56	4/22/2004 1:37:27	94 ppm CO
Peak Exposure	4/22/2004 1:38:09	4/22/2004 1:38:26	80 ppm CO
Peak Exposure	4/22/2004 1:40:42	4/22/2004 1:42:37	95 ppm CO

Rev 1














# GasAlert Extreme Calibration

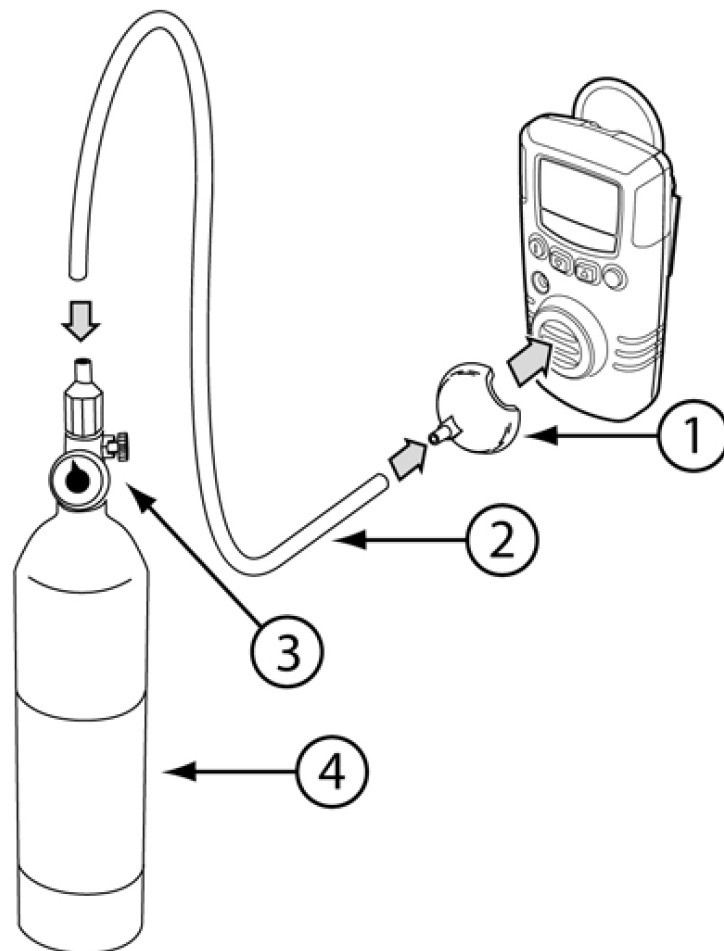
Honeywell

- If calibrating with Chlorine
  - Use short Teflon lined tube
  - 1LPM regulator
  - All others use 0.5 LPM
- CLO2 and O3 require generators

## CALIBRATION:

1. In a clean atmosphere, press  and  simultaneously and hold for 5 seconds. The LCD displays **CAL**.
2. **AUTO-ZERO** flashes while the detector zeroes the gas sensor.
3. Enter the span setting and press  to confirm.
4. When  flashes, connect the gas cylinder and apply gas at a flow rate of 500-1000 ml/min. The detector beeps three times at the end of the span stage. Remove the calibration gas.
5. Press  or  to change the next calibration due date and press  to save.
6. Press  or  to change the alarm setpoint or press  to skip to the next setpoint. Press  to save a changed setpoint. The detector beeps and vibrates four times at the end of calibration.

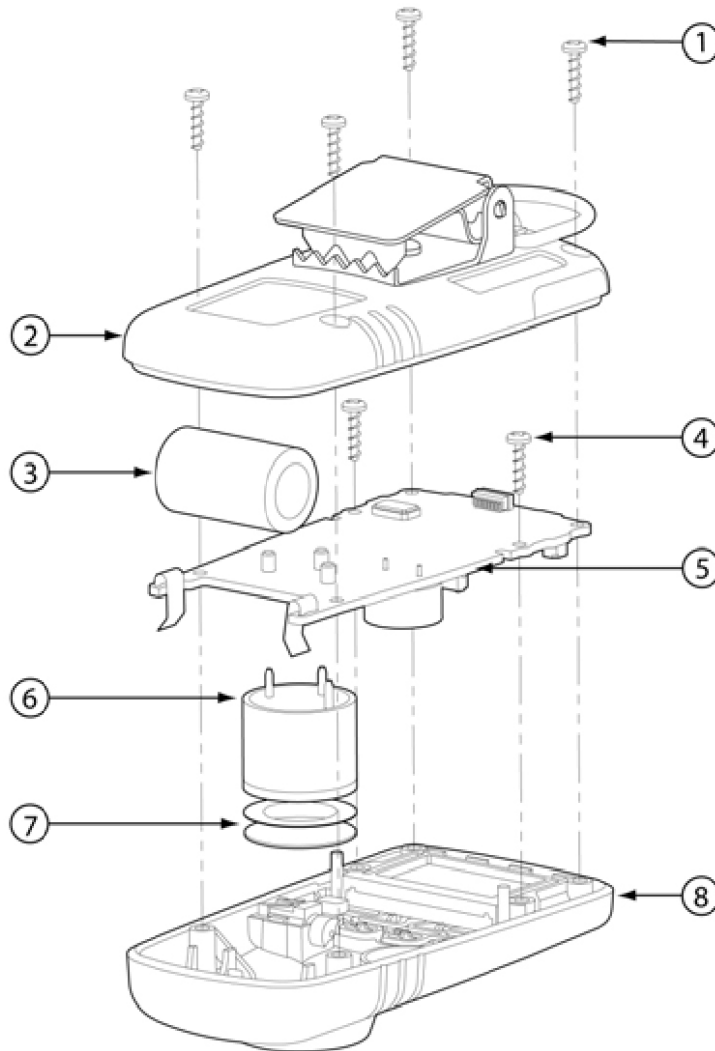
**PASS CODE PROTECT:** Enter the pass code when prompted.



Rev 1

# Assembly

Honeywell



Item	Description
1	Rear shell machine screws (4)
2	Rear shell
3	Battery
4	PCB machine screws (2)
5	PCB
6	Sensor
7	Sensor screen
8	Front shell

Rev 1

# Replacement Parts

**Honeywell**

Description	Order Number	Description	Order Number
Oxygen sensor	SR-X10	PCBs (use letter from order number)	GAXT-__-DL-PCB1
CO sensor, Low H2 Sensitivity	SR-M204	Front housing yellow	GAXT-FC1
CO sensor	PS-RM04	Back Housing yellow	GAXT-BC1
H2S sensor	PS-RH04S	Front housing black	GAXT-FC1B
PH3 sensor	SR-P04	Back housing black	GAXT-BC1B
SO2 sensor	PS-RS04	Alligator Clip	GA-AG-2
CL2 sensor	PS-RC10		
Ammonia sensor	SR-A04		
Extended Range NH3 sensor	SR-A204		
NO2 sensor	PS-RD04		
HCN sensor	PS-RZ10		
ETO sensor	SR-E04		
CLO2 sensor	SR-V04		
O3 sensor	SR-G04		
NO sensor	SR-N04		
Sensor screens	GA-SS		

Rev 1

# PCB Replacement

- Secure replacement board
  - Replacement board P/N GAXT-\_\_-PCB1
    - Fill blank with monitor order number
      - Example: Model GAXT-A-DL would use GAXT-A-DL-PCB1
- Disassemble monitor
  - Discard old PCB install new PCB
- Reassemble unit
  - Apply new serial number labels to back shell
- Power monitor
  - Set date and calibrate

# Battery Replacement

---

Honeywell

- Use Panasonic Photo CR2 batteries ONLY
- Reset date and calibrate when battery is changed

Rev 1



# Troubleshooting Guide

**Honeywell**

Problem	Possible Cause	Solution
Detector does not activate	No battery	Install battery
	Depleted battery	Replace battery
	Damaged or defective detector	Contact BW Technologies by Honeywell
	Reversed battery	Reinstall the battery correctly
Detector enters alarm mode immediately when it is activated	Sensor needs to stabilize	Used sensor: wait 60 seconds. New sensor: wait 5 minutes
	Low battery alarm	Replace battery
	Sensor alarm	Replace sensor
Start up self-test fails during checks	General fault	Contact BW Technologies by Honeywell
	Alarm setpoints incorrect	Reset alarm setpoints
Detector does not display a normal ambient gas reading after activation self-test	Target gas is present	Detector is operating properly. Use caution in suspect areas
	Detector requires calibration	Calibrate detector
	Sensor not stabilized	Used sensor: wait 60 seconds New sensor: wait 5 minutes
Detector does not respond to the push-buttons	Battery is depleted	Replace battery
	Detector is performing operations that does not require user input	Pushbutton operation restores automatically when operation ends

Rev 1

# Troubleshooting Guide (cont'd)

**Honeywell**

Problem	Possible Cause	Solution
Detector does not accurately measure gas	Detector requires calibration	Calibrate sensor
	Detector is colder/hotter than ambient gas	Allow detector to acquire ambient temperature before use
	Sensor screen is blocked	Clean sensor screen
Detector does not enter alarm mode	Alarm setpoint(s) are set incorrectly	Reset alarm setpoints
	Alarm setpoint(s) set to zero	Reset alarm setpoints
	Detector is in calibration mode	Complete calibration
Detector intermittently enters alarm mode without apparent reason	Ambient gas levels are near alarm setpoint or sensor is exposed to a puff of the target gas	Detector is operating normally. Use caution in suspect areas. Check MAX gas exposure reading
	Alarms set incorrectly	Reset alarm setpoints
	Missing or faulty sensor	Replace sensor
Detector automatically deactivates	Automatic shutdown feature activated due to depleted battery	Replace battery
Detector does not auto zero or calibrate	Sensor may be expired	Change sensor
O2 sensor reading is erratic	Sensor may be expired	Change sensor

Rev 1



# MicroDock II Module

Honeywell



Rev 1

# GasAlert Clip Extreme

Honeywell

- 24-month version
    - O<sub>2</sub>
    - H<sub>2</sub>S
    - CO
    - SO<sub>2</sub>
  - 36-month version
    - H<sub>2</sub>S
    - CO
  - Standard Features
    - Vibrator
    - Built-in rubber boot
    - Stainless steel alligator clip
  - Larger visual alarm windows
  - IP66/67
- LCD display
    - Life countdown
    - Max exposure
    - Time since alarms
  - Stores 10 alarm incidents
    - Can be sent to printer or PC via IR port
  - 2.7 oz. (76g)
  - Low/High alarm settings



Rev 1

# GasAlert Clip Extreme

Honeywell

- Self test automatically triggered when in MicroDock II
- Monthly O<sub>2</sub> calibration reminder
  - Logged in event log



Rev 1

**BW**  
Technologies  
by Honeywell

# GasAlert Clip Extreme

Honeywell

- Continuously On
- One-button activation and test
- Alarm events/duration of events
- Countdown during IR download
- No battery or sensor replacement
- No calibration required
- LOW and HIGH setpoints displayed on demand in ppm or %
- Activation by date on box
- 90db audible alarm



Rev 1

**BW**  
Technologies  
by Honeywell

# GasAlert Clip Extreme

Honeywell

- Stores 10 alarm events
  - Download via IR Datalink GA-USB2
  - MicroDock II - preferred
  - Results can be viewed in Fleet Manager II



Rev 1

**BW**  
Technologies  
by Honeywell

# MicroDock II module

Honeywell



Rev 1

# GasAlert Clip Extreme Tips

Honeywell

- Calibrate O2 clips
  - Hold down blue button again for 10 seconds after completed self test
  - Clips will not respond to gas until 30 seconds after self-test
- 2 year life is based on 3min/day of alarm time
  - Higher alarm rates will cause units to reduce time remaining accordingly
  - E02 and E03 indicate monitor has timed out due to normal expiry or excessive alarm time

Rev 1



# GasAlert Clip Extreme Replacement Parts

**Honeywell**

Description	Order Number
Universal Front Cover	GA24XT-FC1
H2S Specific Front cover	GA24XT-H-FC1
Universal Back Cover	GA24XT-BC1
Universal LCD replacement	GA24XT-LCD
Sensor Screen	GAXT-SS

Rev 1

# GasAlert Clip Extreme Repair Tips

Honeywell

Problem	Solution
How does user activate monitor?	Hold button down for 5 seconds
How often and how should user perform a self test?	Daily, hold button down for five seconds in clean environment
How often and how should user calibrate Oxygen sensor	At least once per month, press and hold button for three seconds in clean air
Monitor will not respond to gas	Replace sensor screen, if it still does not respond to gas, contact local BW office
Monitor is past <b><u>activation</u></b> date, can it still be used?	Yes but BW does not guarantee full 24 or 36 months of operation

Rev 1

# GasAlert Clip Extreme VE

Honeywell

- Auto-Zero function for low PPM alarms
  - New event type added to event log - records when user initiates auto-zero
  - Enabled when < 5 ppm for H<sub>2</sub>S, < 25ppm CO, < 3ppm for SO<sub>2</sub>
  - EDM and IR Data Link don't support new event definition
  - Fleet Manager II supports event
- E03 Error code added for too much alarm time
- Button press disabled during alarm condition
- O<sub>2</sub> Calibration time changed
- Event log resolution changed
  - Resolution for CO is 1ppm from 5
  - H<sub>2</sub>S, SO<sub>2</sub> 1ppm (no change)
  - O<sub>2</sub> 0.1% (no change)

Rev 1

# GasAlert Clip Extreme Improvements

Honeywell

- High Quality Robotic Assembled H2S sensor
- Auto zero functionality added to toxic versions
- HOS: The fewer electronic components in a design the fewer there are to fail
- Vibrating Motor improved from earlier CLIP VE models



Rev 1

**BW**  
Technologies  
by Honeywell

# GasAlert Clip Extreme Improvements (cont'd)

**Honeywell**

- Lower alarm set points
  - Instrument supports fractional alarm set-points
  - Alarm setting for H<sub>2</sub>S below 10 ppm can be fractional (eg 2.5 ppm)
  - Fractional alarm set points rounded when transferred to Fleet Manager
    - eg 2.4ppm becomes 2ppm, 2.5ppm becomes 3ppm
- Self test can run in background and can fail detector automatically if sensor fault is detected
  - Functionality of user – initiated self test has not changed
  - Additional testing is being performed in background without user initiation
  - Background self test can fail instrument resulting in E05

Rev 1

# GasAlert Clip Extreme Auto Zero

Honeywell

- In a fresh air environment
  - Press and hold button for 10 seconds
  - Screen displays 2Er
  - Enters self test
  - Indicates alarms and maximum exposure in 5 ppm increments
  - Only applies to SO<sub>2</sub> and O<sub>2</sub>



Rev 1

**BWT**  
Technologies  
by Honeywell

# GasAlertMicroClip and GasAlertMicroClip XT Honeywell

- Combines features from field proven GasAlertClip Extreme with state of art electronics
- Ultra Compact
  - 4.2 x 2.4 x 1.4 in / 10.7 x 6.0 x 3.6 cm
- Lightweight
  - 5.7 oz. / 160 g
- Simple One-button operation
- Standard datalogger (16 hours)
- Standard eventlogger (10 events)
- Integral concussion-proof boot with alligator clip
- Continuous LCD shows simultaneous gas concentration
  - H<sub>2</sub>S
  - CO
  - O<sub>2</sub>
  - Combustibles (0-100% LEL or 0-5.0% Methane)
- Powered by lithium polymer cell
  - 10 hour typical run-time





# GasAlertMicroClip

Honeywell

- 95 dB alarm tone and four bright wide-angled alarm bars
- Standard internal vibrating alarm for high noise areas
- Backlight
  - In alarm (auto)
  - On demand reactivation
- Four alarm levels
  - Instant Low and High Alarm for all gases
  - TWA (time weighted average)
  - STEL (short term exposure limit) for H<sub>2</sub>S, CO
  - OL (over limit alarm) for combustible gases
- Simple automatic calibration procedure
  - Compatible with MicroDock II
- Records TWA, STEL and maximum exposures to gas and displays readings on command
- Full function self-test
  - Sensor, battery and circuitry integrity
  - Audible/visual alarms



Rev 1

# GasAlertMicroClip XT

Honeywell

- Same operation users are accustomed to and prefer
- Multi-gas versatility with one-button simplicity
- Thin and lightweight
  - Comfortable to wear and carry
- 4 series Oxygen sensor
  - Improved Life span
  - Improved stability
  - Lower replacement costs
- Addition of IntelliFlash
  - Visual compliance made simple
  - Time savings leads to lower cost of operation
- Change in Li-po Battery
  - Improved performance



Rev 1

**BW**  
Technologies  
by Honeywell

# Differences

- Functionally both units operate similarly
- PCB, housings, Oxygen sensor and filters are different
- Both units use same CO, H2S, LEL sensors, LCD screen and calibration caps
- Use same plug in chargers
  - Charging bays and docking modules are unique



# GasAlertMicroClip Interface

Honeywell

- User Options can be accessed through PC connection cable or MicroDock II
- All configuration is done through Fleet Manager II Version 2.6
  - SoftTools software still works for most functions
- Both yellow and blue IR links are compatible with both hardware versions



Rev 1

# Configuration with Fleet Manager II

**GasAlertMicroClip / GasAlertMicroClip XT Configuration**

Sensors    Device Operations

**Detector Identification**

Serial Number:

Hardware/Firmware Revision:

Startup Message Top Line:

Startup Message Bottom Line:

---

**Carbon Monoxide (CO)**

☐ Disabled

Calibration Gas:  ppm

Calibration Interval:  days

Bump Interval:  days

Low Alarm:  ppm

High Alarm:  ppm

TWA Alarm:  ppm

STEL Alarm:  ppm

STEL Interval:  minutes

☐ Auto-Zero on Start-up

**Hydrogen Sulfide (H2S)**

☐ Disabled

Calibration Gas:  ppm

Calibration Interval:  days

Bump Interval:  days

Low Alarm:  ppm

High Alarm:  ppm

TWA Alarm:  ppm

STEL Alarm:  ppm

STEL Interval:  minutes

☐ Auto-Zero on Start-up

**Oxygen (O2)**

☐ Disabled

Calibration Gas:  %O2

Calibration Interval:  days

Bump Interval:  days

Low Alarm:  %O2

High Alarm:  %O2

☐ Auto-Calibration on Start-up

**Combustibles (LEL)**

☐ Disabled

Calibration Gas:  %LEL

Calibration Interval:  days

Bump Interval:  days

Low Alarm:  %LEL

High Alarm:  %LEL

☐ Auto-Zero on Start-up

☐ LEL by Volume CH4

**User Options**

☐ Latching Alarms

☐ Safe Mode

☐ Stealth Mode

☐ IR Stealth Mode

☐ Low Alarm Acknowledge

☐ Force Calibration When Overdue

☐ Cal Lock

☐ Force Bump When Overdue

☐ Confidence Beep

☐ IntelliFlash  
(Applicable to GasAlertMicroClip XT only)

Confidence Beep and IntelliFlash Interval:  seconds  
(IntelliFlash Interval is applicable to GasAlertMicroClip XT only):

**Language**

☒ English

☐ Français

☐ Deutsch

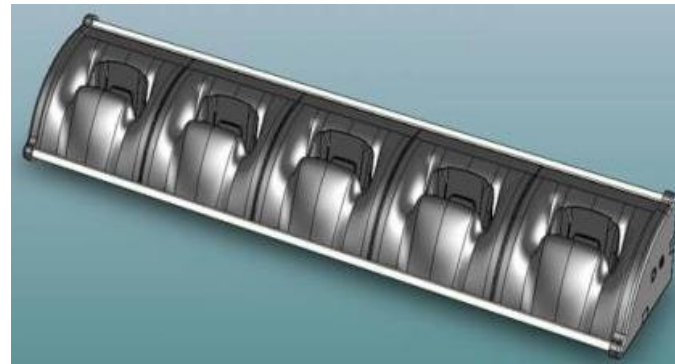
☐ Español

☐ Português

Save To Device    Retrieve From Device    Save To File    Load From File

# Charging

Honeywell














Rev 1

**BW**  
Technologies  
by Honeywell

# Calibration

Honeywell

GasAlertMicroClip - Calibration			
Procedure	Display	Procedure	Display
1. In a clean atmosphere, press and hold  as the detector beeps, flashes, and vibrates to the corresponding OFF countdown. Continue to hold  as the detector briefly deactivates.		4. The LCD now prompts you to apply calibration gas to the sensors.	
2. The detector then reactivates and performs the CAL countdown. Continue to hold  until the CAL countdown is complete to enter calibration.		5.  flashes and <b>AUTO-SPAN</b> remains displayed as you attach the calibration cap and apply gas to the sensors at a flow rate of 250 to 500 ml/min. When the detector senses a sufficient amount of gas concentration (approximately 30 seconds), the audible alarm beeps once, <b>AUTO-SPAN</b> flashes, and  remains lit while the detector completes the span (approximately 2 minutes).	
3. The LCD flashes <b>AUTO-ZERO</b> while the detector automatically zeroes the toxic and combustible sensors and calibrates the oxygen sensor. The LCD will notify you if the auto zero has failed for a sensor. The audible alarm then beeps twice.		6. After span is complete, the LCD displays the following calibration due date screens before returning to normal operation. - CAL DUE - 180 (per sensor) - CAL DUE 180 d.	

Rev 1



# External Auxiliary Filter

Honeywell

- Auxiliary filter for use in dirty environments
  - Minimize changing of sensor filter cover
- Compatible with both versions

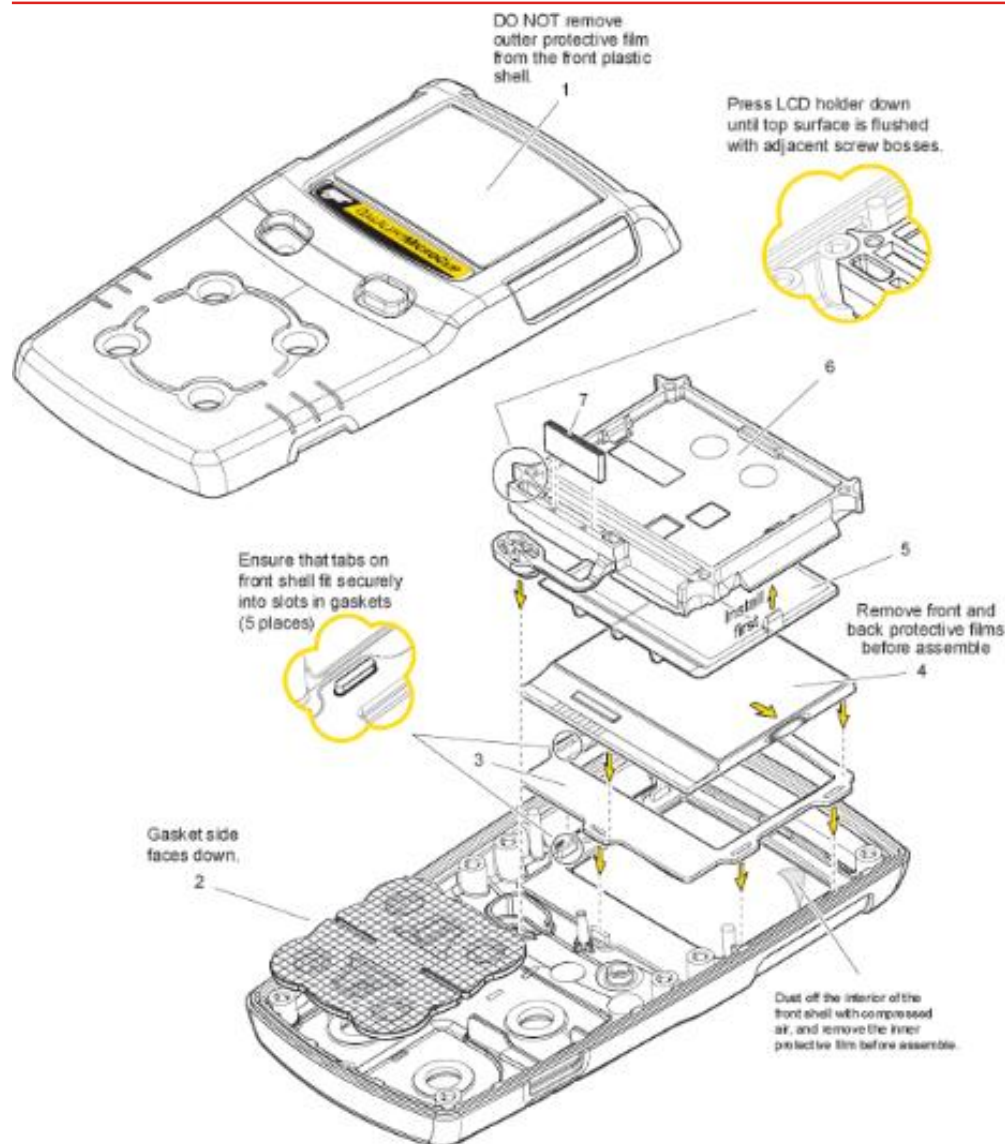


Rev 1

**BWT**  
Technologies  
by Honeywell

# Basic Disassembly

Honeywell

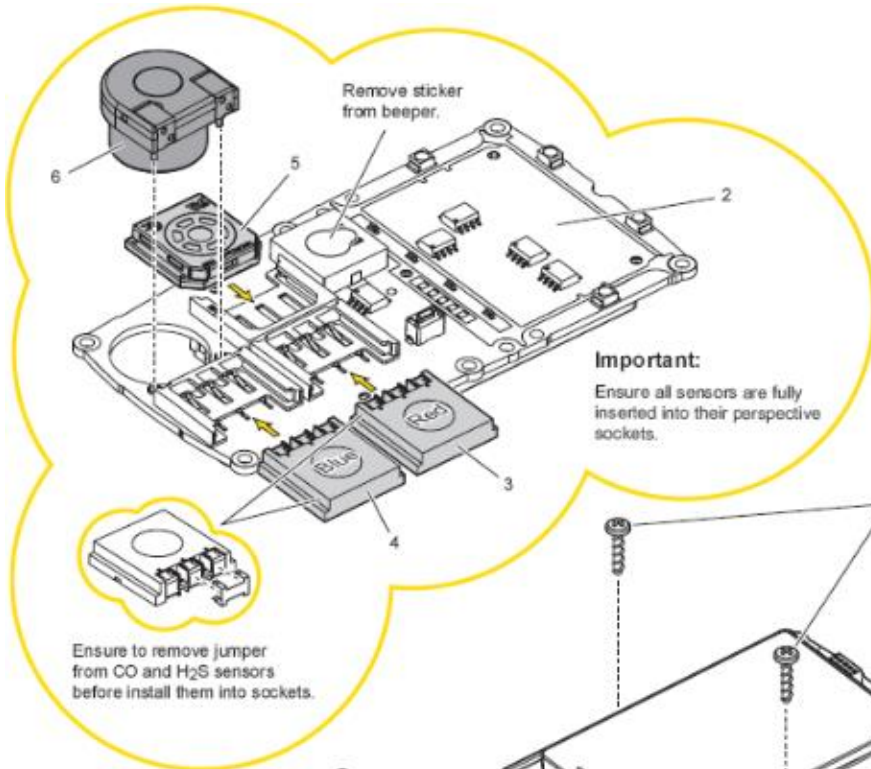


Order No	Item	Qty	Description
MC-FC1	1	1	Plastic - Front shell, yellow
MC-SS	2	1	Sensor screen
MC-LCD-K1	3	1	Gasket - LCD gasket
	4	1	LCD
	5	1	Light pipe
	6	1	Plastic - LCD holder
	7	1	Zebra strip

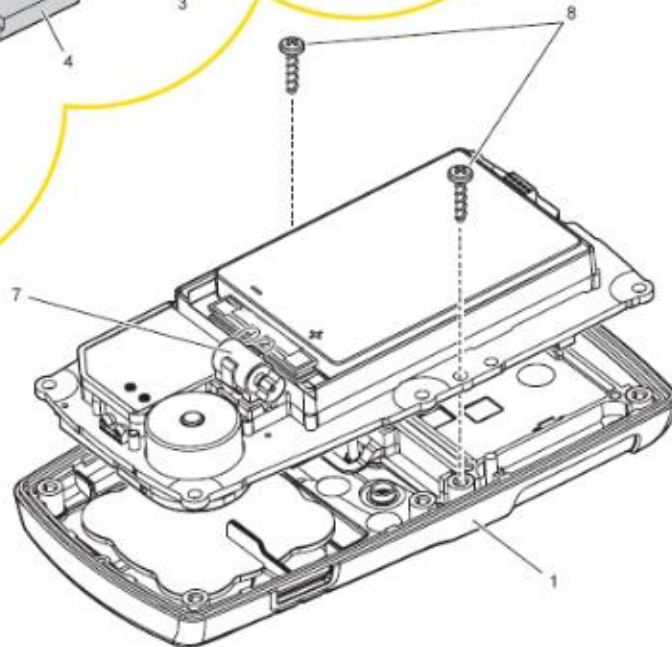
Rev 1

# Assembly

Honeywell



Order No	Item	Qty	Description
MC-BC1	1	1	Plastic - back shell, yellow
	2	1	Front Assembly
	3	6	Screw - #2-14 x 3/8" pan, Phillips thread cutting, stainless steel

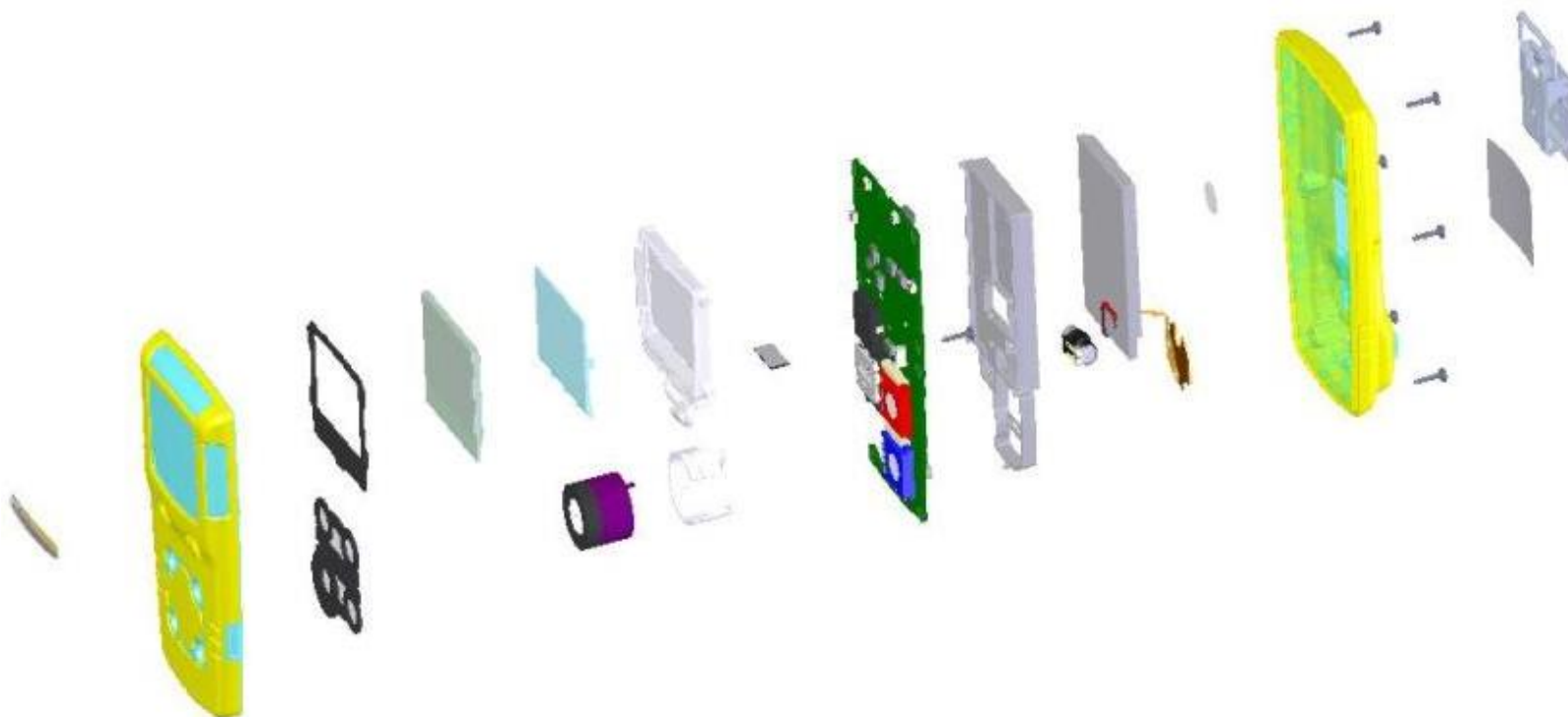


Rev 1

# GasAlertMicroClip XT – Troubleshooting

Honeywell

- Exploded Diagram

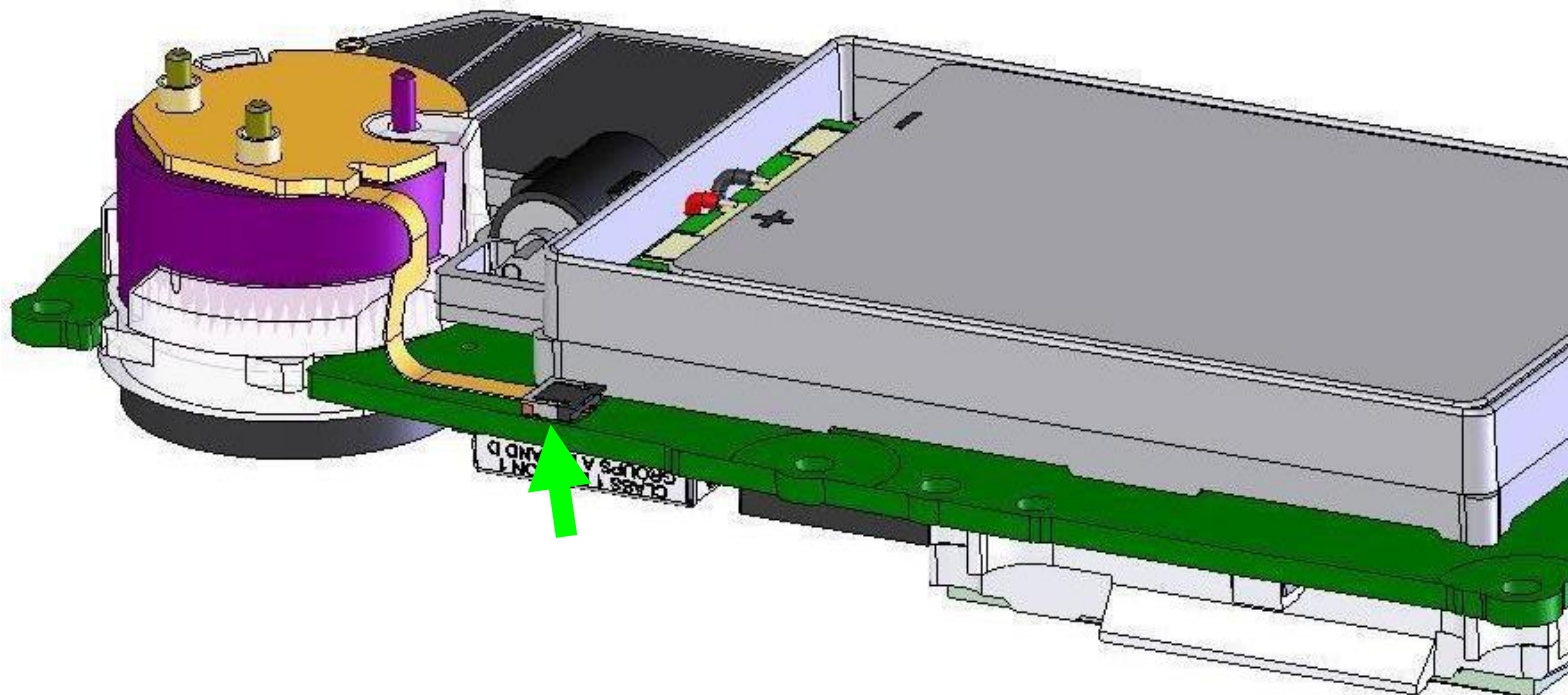


Rev 1

# GasAlertMicroClip XT – Troubleshooting

Honeywell

- Flex PCB Connector
  - Connector on PCB incorporates cable lock
    - To open/unlock lift black part of the connector



Rev 1

**BW**  
Technologies  
by Honeywell

# Replacement Parts

**Honeywell**

Description	MicroClip XT	MicroClip
Replacement front enclosure (yellow)	MC2-FC1	MC-FC1
Replacement front enclosure (black)	MC2-FC1B	MC-FC1B
Replacement back enclosure (yellow)	MC2-BC1	MC-BC1
Replacement back enclosure (black)	MC2-BC1B	MC-BC1B
Replacement LCD kit	MC-LCD-K1	MC-LCD-K1
Replacement Main PCB	MC2-MPCB1	MC-MPCB1
Filters, kit of 2	MC2-SS	MC-SS
Filters, kit of 10	MC2-SS-K1	MC-SS-K1
Replacement LEL Sensor	SR-W-MP75C	SR-W-MP75C
Replacement H2S Sensor	SR-H-MC	SR-H-MC
Replacement CO Sensor	SR-M-MC	SR-M-MC
Replacement O2 Sensor	SR-X10-C1	SR-X-MC
Replacement Flex PCB	MC2-FPCB1	na

Rev 1



# Firmware Upgrade

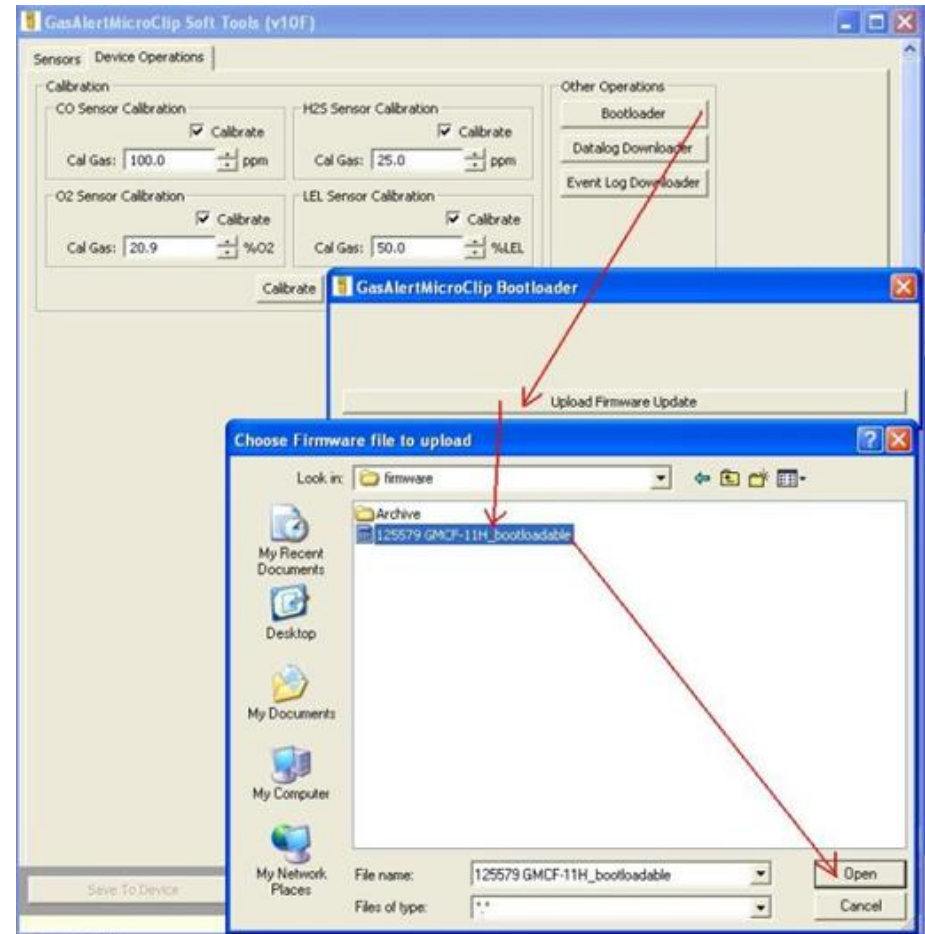
- Required
  - IR connectivity Kit
  - Softtools v10F or Fleet Manager II
- Power unit
  - Connect to IR connectivity kit
- Run Softtools
  - Execute retrieve from device
  - Ensure bottom lights up green
- If firmware version is other than 30B or 11H
  - If installed firmware is 30A, 30B or 30C
    - Download and unzip 30D from [www.gasmonitors.com](http://www.gasmonitors.com)
  - If installed firmware is 11A-11G
    - Download and unzip 11H from [www.gasmonitors.com](http://www.gasmonitors.com)
- No updates for GasAlertMicroClip XT at this time



# Firmware Upgrade (cont'd)

Honeywell

- To upgrade
  - Select device operations tab
  - Press bootloader button
  - Select firmware then press open
- Blue box should appear every 3-5 seconds in progress bar
  - Monitor displays “loading” then restart when complete



Rev 1

# LEL Sensor Types

- Two types of LEL sensors used in MicroClip and MicroClip XT
  - Micropel75/sr-w-mp75
  - Micropel40/sr-w-mp
- MICROpel 75C installed in new units and any unit with 30A-30D firmware
- Micropel40 installed in units built in 2006 and early 2007 or any unit with 11H firmware
  - Sensor soon to be obsolete
- Units with serial numbers starting with KA2-4 use Micropel75
  - Those starting with KA1 use MICROpel 40
  - Firmware is only way to be sure what sensor should be installed
- When Micropel40 sensor is no longer available
  - PCB will have to be replaced when sensor needs replacement
- All MicroClipXT units and Max XT units come with and work with SR-W-MP75

# Reasons to Replace Circuit Boards

---

Honeywell

- Failed batteries
- Failed buzzers
- Customers that wish to upgrade from KA1 to KA2 hardware
- Unit will no longer power up
- Bootloader errors

Rev 1



# PCB Replacement Guide

- Disassemble monitor
  - Remove all sensors check for corrosion
- If monitor originally had a micropel40 sensor replace with new micropel75 (sr-w-mp75) sensor
- Install old sensors in the new PCB and reassemble
- Power monitor
  - Should display “IR LOAD Factory”
  - Connect to an IR Connectivity kit
- “Retrieve from device”
  - Serial number field should be blank
  - Enter monitor’s serial number and “save to device”
- Softtools should light up green and monitor should start up
- Bump and calibrate

# Additional MicroClip Repair Tips

Honeywell

Problem	Resolution
Monitor displays IR load factory on start up	Use soft tools to “retrieve from device” and then “save to device” while message is displayed
I need a new rear label	Contact your local BW office and they will print and mail one
Monitor will not power and all LEDs are lit	Charge for 72 hours
H2S or CO sensor is showing erratic readings due to poisoning	Remove PCB and sensors from case and allow them to air out for 48 hours
Battery will not charge at all - no indicator	Charge pins have broken off, replace rear housing
Error 44 or CRC bad flashes on display	Replace PCB

Rev 1

**GasAlert**  
**MaxXT**

**GasAlert**  
**MaxXT II**

# GasAlertMax XT/GasAlertMax XT II

Honeywell

- GasAlert Max XT combines features from field proven GasAlert Max with state of the art electronics
  - Standard datalogger (16 hours minimum)
  - Event logger (30 events) and docking station test records
  - LCD shows all real time gas concentrations
  - Powered by a lithium polymer cell, typical run-time 13 hours
  - Fully integrated diaphragm sampling pump
  - Remote sampling up to 66 feet (20 meters)
  - Instrument can be temporarily operated in diffusion mode



Rev 1

**BW**  
Technologies  
by Honeywell



# GasAlertMax XT

Honeywell

- Features

- 95 dB audible alarm
- Three bright wide-angled visual alarm bars
- Standard internal vibrating alarm
- Backlight automatically activated
  - In alarm condition
  - In low light environment - can be disabled
  - On demand
- Four alarm levels
  - Instant Low and High for all gases
  - TWA and STEL for H<sub>2</sub>S, CO
  - OL (over limit alarm) for combustible sensor
  - Pump flow alarms
- TWA, STEL and maximum exposures available for display on demand
- Simple, automated calibration procedure w/single-button operation
- Compatible with MicroDock II
- Full function self-test
  - Sensor
  - Battery
  - Electronic circuitry
  - Audible/visual alarms



Rev 1

**BW**  
Technologies  
by Honeywell

# Max XT II unique features

Honeywell

- Change to new O2 sensor includes
  - New O2 sensor 121492 (SR-X10-C1)
    - Longer Expected Life
    - Improved temperature stability
    - Lower failure rate
    - Increased MTBF (mean time between failures)

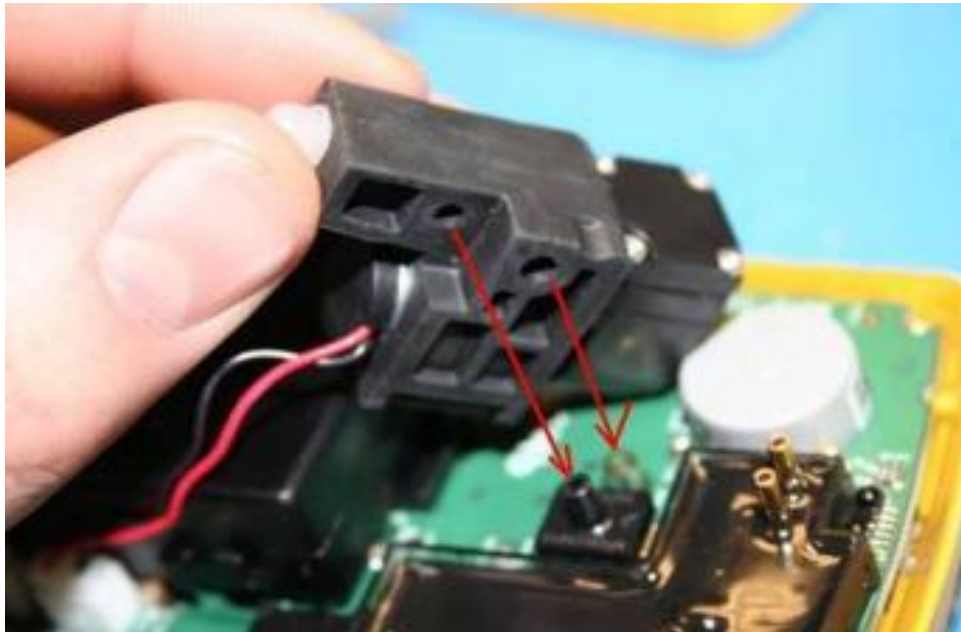


Rev 1

# BW Pump Advantages

Honeywell

- Sampler pack and M5 Use Rotary Vane pumps
- Max XT uses a diaphragm pump and a semiconductor pressure sensor
  - Maximum tubing length of 66 Feet
- Variety of sampling accessories
- Metal Sintered Filter included



Rev 1

**BW**  
Technologies  
by Honeywell

# Charging Options

Honeywell

- Inline charging with direct AC adaptors
  - Plug types are region specific



Rev 1

# MicroDock II Module

Honeywell

- All modules are charging
- Data-log and event-log transmit during a test
- All modules work with pump
  - Detector must have pump operational for test
- Up to 6 charging modules



Rev 1

**BW**  
Technologies  
by Honeywell

# Changes

Honeywell

- New PCB Assembly
  - Old PCB assembly remains available
- New Front Case
  - Old front case remains available
- New Back Case
  - Will fit new and old product
  - Old back case will no longer be available
- New Sensor Screen
  - Old sensor screen remains available



GasAlert  
**MaxXT II**

Rev 1

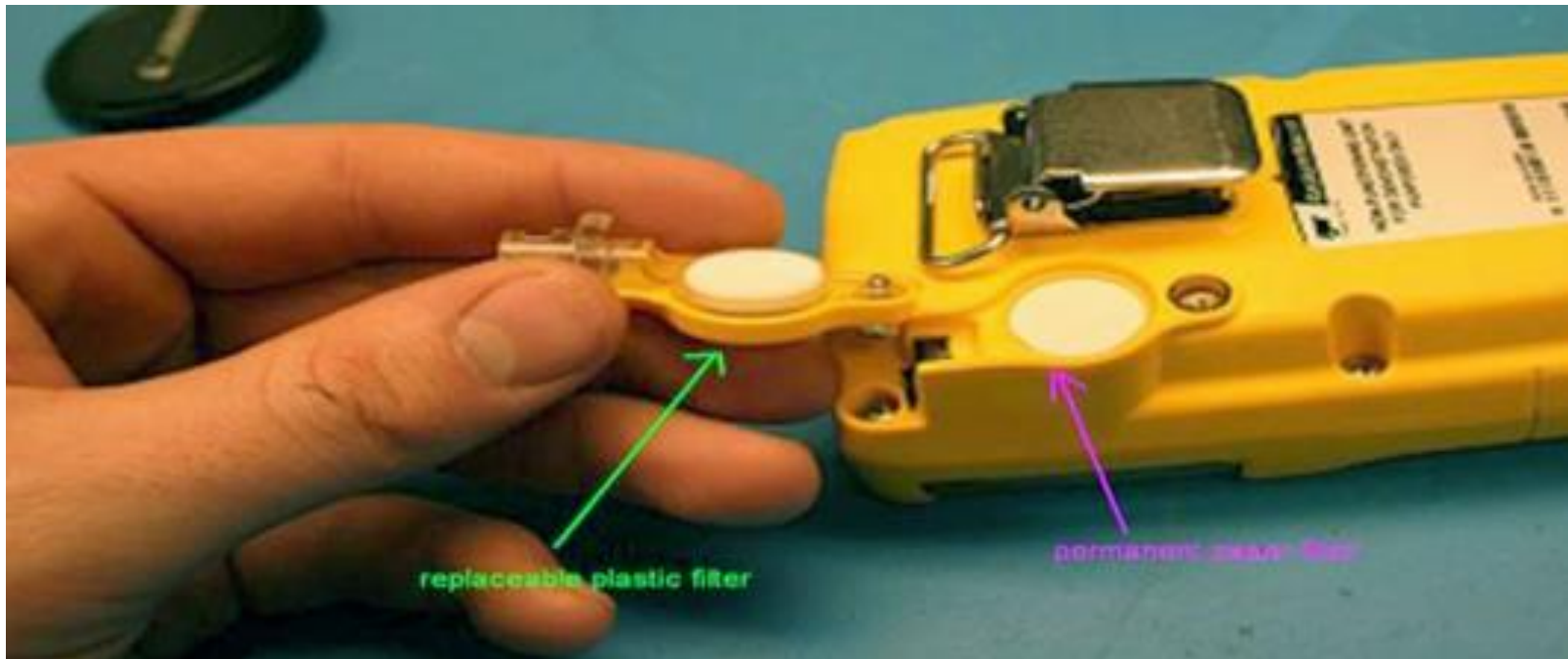
**BW**  
Technologies  
by Honeywell



# Pump Filters

Honeywell

- Thick plastic replaceable filter designed to keep most particulate out
  - Smooth side faces incoming air
- In addition a thin paper filter designed as vapor barrier



Rev 1



# Diffusion Operation

Honeywell

- Max XT can easily be converted to a diffusion monitor
  - Remove front cover to deactivate pump
- Provides flexibility with decreased downtime



Rev 1

**BW**  
Technologies  
by Honeywell

# Calibration

Honeywell

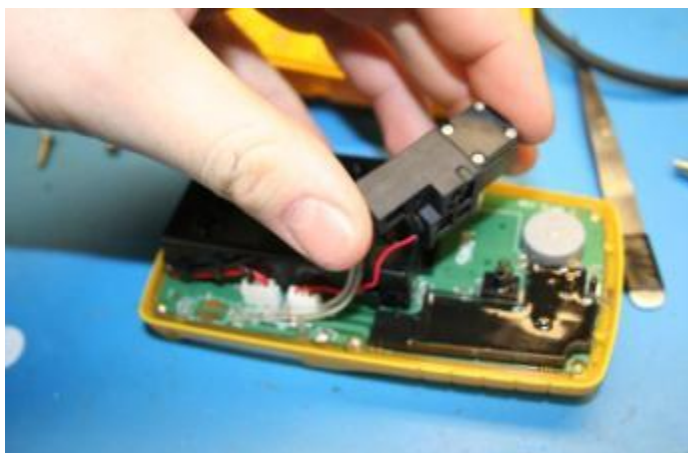
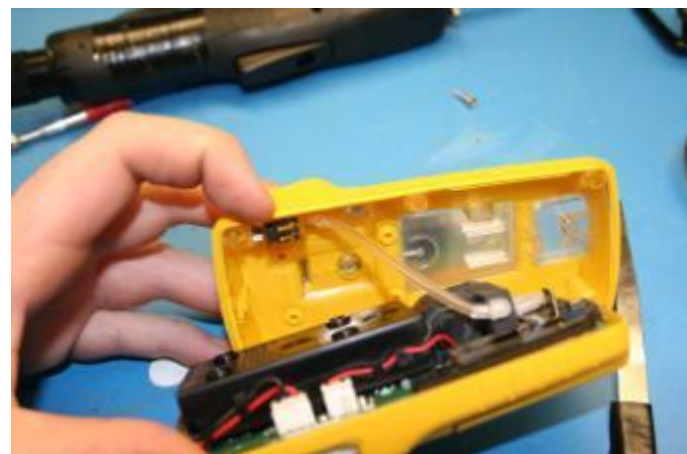
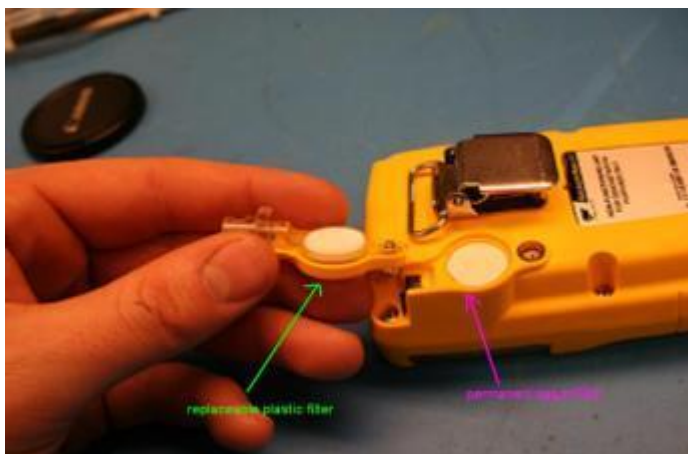
- To enter calibration mode
  - Hold button for 7 seconds
    - Unit will zero taking in fresh air
  - Prompts for calibration
    - Apply 2.5% CH<sub>4</sub>, 25ppm H<sub>2</sub>S, 100ppm CO and 18% oxygen
- Monitor performs sensor test during calibration
  - If sensor does not respond fast enough it will fail at end of calibration
- Please note O<sub>2</sub> sensor is also calibrated with this monitor



Rev 1

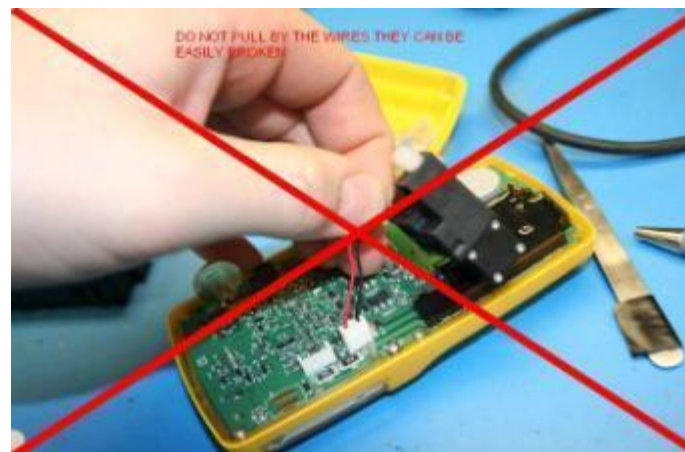
# Disassembly

Honeywell



# Disassembly 2

Honeywell





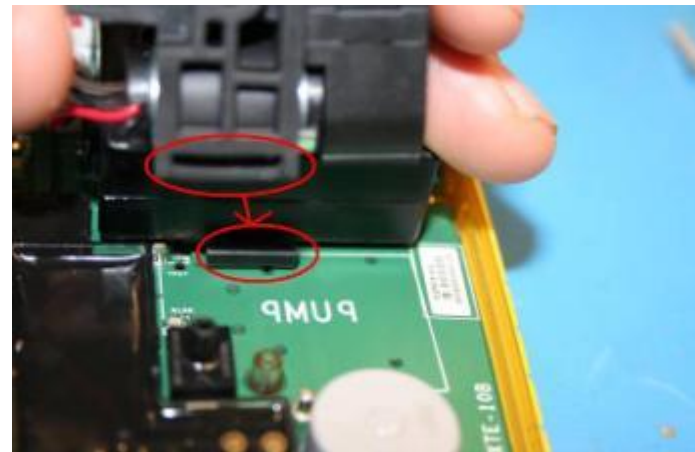
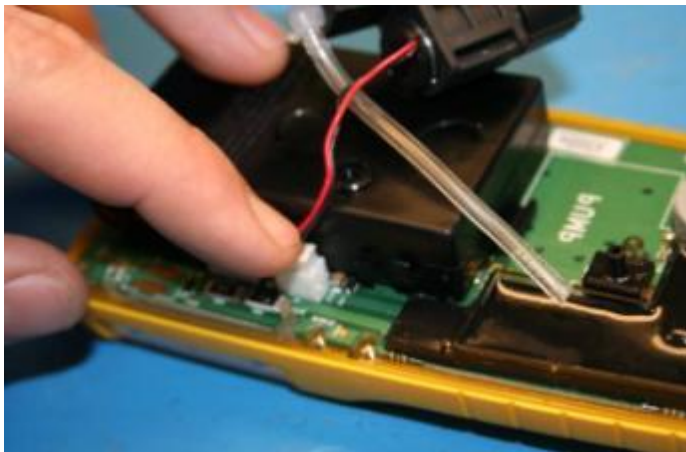
# Disassembly 2

Honeywell



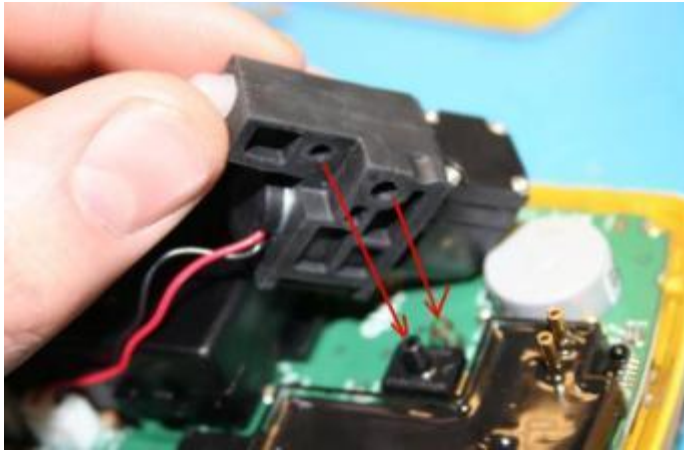
# Assembly

Honeywell



# Assembly 2

Honeywell



**Always ensure hose is connected when reassembling**

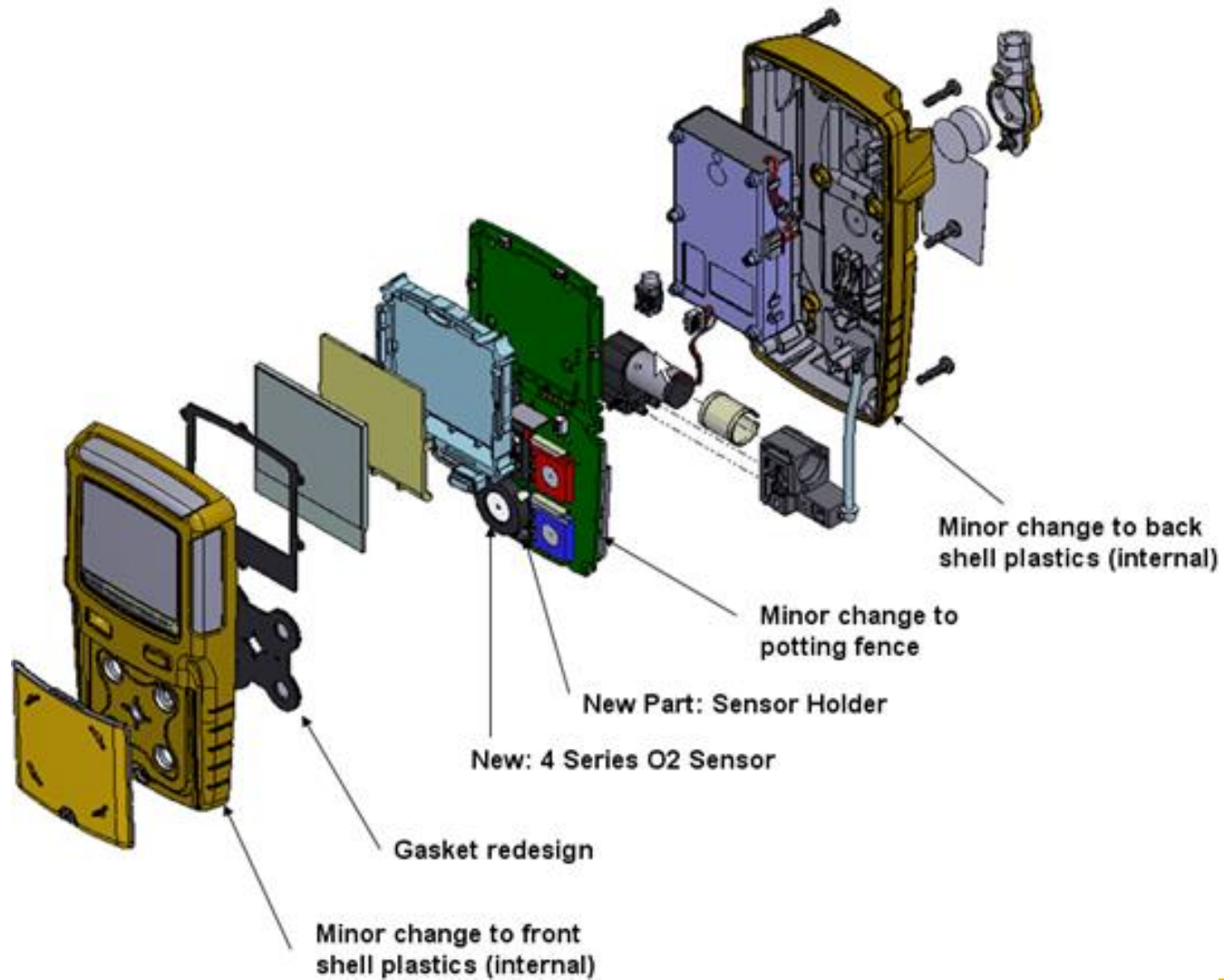
Rev 1

**BWF**  
Technologies  
by Honeywell



# Assembly Drawing

Honeywell



Rev 1

# Docking Module Insertion

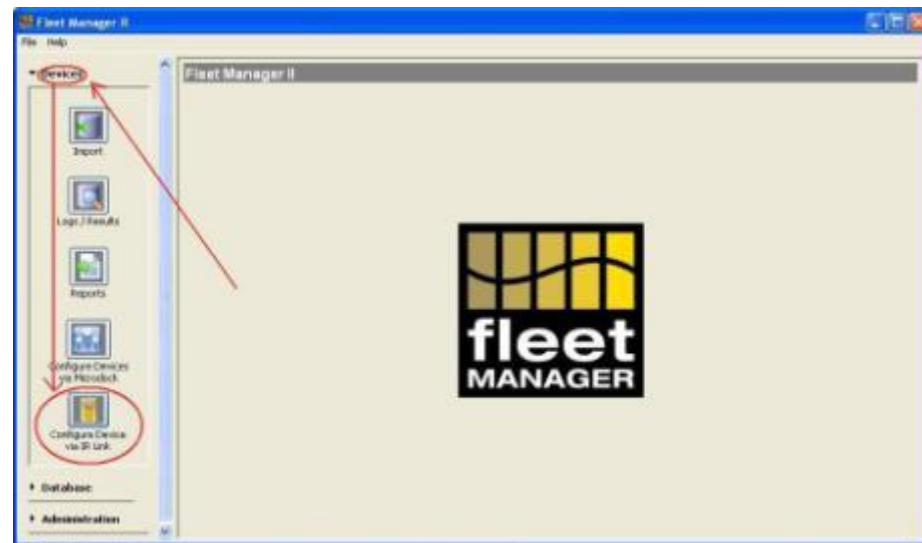
Honeywell



# Fleet Manager II Configuration

Honeywell

- Use the latest Fleet Manager II
  - Log in as Admin with the password Admin
  - Select Devices and Configure VIA IR LINK
  - Requires same drivers as Softools



Rev 1

# Fleet Manager II Configuration Basics

Honeywell

**GasAlertMax XT Configuration**

User Options

Device Configuration

Serial Number:

Firmware Version:

Hardware Version:

Startup Message Top Line:

Startup Message Bottom Line:

Lockout on Self-Test Error: ☐

Safe Mode: ☐

Force Bump: ☐

Force Calibration: ☐

Cal IR Lock: ☐

Latching Alarms: ☐

Location Logging: ☐

Force Block Test: ☐

Confidence Beep: ☐

Confidence Interval (seconds):

Datalog Interval (seconds):

Language:

Sensor Configuration

H2S CO O2 LEL

**Hydrogen Sulfide (H2S)**

Sensor Disabled: ☐

Calibration Gas (ppm):

Calibration Interval (days):

Bump Interval (days):

Low Alarm (ppm):

High Alarm (ppm):

TWA Alarm (ppm):

STEL Alarm (ppm):

STEL Interval (minutes):

TWA Period (hours):

Auto-Zero on Start-up: ☒

Low Alarm Acknowledge: ☐

Save To Device Retrieve From Device Save To File Load From File Exit

Set Device Time Calibrate Bootloader Reset Logs

Rev 1

**BW**  
Technologies  
by Honeywell

# Firmware

- To upgrade
  - Connect with Fleet Manager II
  - Click boot loader
    - Find file and send it
- Installed Firmware version
  - Available during start up
  - After “retrieve form device” on Fleet Manager II
- Version 8 is latest
  - Compatible with both Max XT and Max XT II



# LEL Sensor

- Monitor uses Micropel75C sensor
  - Concentration can be viewed as percent by volume of methane or as %LEL
- Can be set to over span by 5%
  - Instead of setting calibration gas to 55%.
- Correction factor is available
  - Multiplier used to calibrate with a surrogate gas to show accurate readings for another gas

The screenshot shows a 'Sensor Configuration' window with tabs for H2S, CO, LEL, and O2. The LEL tab is selected. The window contains a section titled 'Combustables/LEL (LEL)' with the following settings:

Parameter	Value
Sensor Disabled	<input type="checkbox"/>
Calibration Gas (%LEL):	50.0
Calibration Interval (days):	180
Bump Interval (days):	0
Low Alarm (%LEL):	10.0
High Alarm (%LEL):	20.0
Correction Factor:	1.00
50% LEL = (%CH4):	2.5
Auto-Zero on Start-up	<input checked="" type="checkbox"/>
LEL by Volume CH4	<input type="checkbox"/>
5% LEL Over-span	<input type="checkbox"/>
Low Alarm Acknowledge	<input type="checkbox"/>

# Oxygen Sensor

- Uses the 9 series O2 sensor rated to -20c
- Can be set to zero on 20.8% instead of 20.9%

Sensor Configuration

H2S CO LEL O2

**Oxygen (O2)**

Sensor Disabled ☐

Calibration Gas (%O2):

Calibration Interval (days):

Bump Interval (days):

Low Alarm (%O2):

High Alarm (%O2):

Auto-Zero on Start-up ☒

20.8% base reading ☐



# Toxic Sensors

Honeywell

- Same sensors used in GasAlertMicroClip
  - All alarms and STEL/TWA timers are settable
- Defaults to auto zeroing on start up

Sensor Configuration

H2S CO LEL O2

**Carbon Monoxide (CO)**

Sensor Disabled ☐

Calibration Gas (ppm): 100.0

Calibration Interval (days): 180

Bump Interval (days): 0

Low Alarm (ppm): 35.0

High Alarm (ppm): 200.0

TWA Alarm (ppm): 35.0

STEL Alarm (ppm): 50.0

STEL Interval (minutes): 15

TWA Period (hours): 8

Auto-Zero on Start-up ☒

Low Alarm Acknowledge ☐

Sensor Configuration

H2S CO LEL O2

**Hydrogen Sulfide (H2S)**

Sensor Disabled ☐

Calibration Gas (ppm): 25.0

Calibration Interval (days): 180

Bump Interval (days): 0

Low Alarm (ppm): 10.0

High Alarm (ppm): 15.0

TWA Alarm (ppm): 10.0

STEL Alarm (ppm): 15.0

STEL Interval (minutes): 15

TWA Period (hours): 8

Auto-Zero on Start-up ☒

Low Alarm Acknowledge ☐

Rev 1

# Event Logs

- All events recorded similar to GasAlertMicroClip
  - New view button allows to select which columns to view

Logs / Results View									
		View...	<Main View>				Filter...	<No Filter Applied>	
<div><div>+</div> GasAlertMicroClip</div> <div><div>+</div> GasAlertMicro 5</div> <div><div>-</div> GasAlertMax XT</div> <div><div>+</div> Event Logs</div> <div><div>+</div> Datalogs</div> <div><div>+</div> Bump/Cal Results</div> <div><div>+</div> GasAlertMicro</div> <div><div>+</div> All Results</div>	Serial Number	Start Time	Event Type	Duration	H2S Status	H2S Peak (ppm)	CO Status	CO Peak (ppm)	O2
	MA107-001176	2008-01-08 11:02:04	Peak Exposure	10	HIGH Alarm	25.0	LOW Alarm	100.0	LOV
	MA107-001176	2008-01-08 16:26:07	Peak Exposure	53	HIGH Alarm	21.0	LOW Alarm	80.0	LOV
	MA107-001176	2008-01-08 16:41:44	Peak Exposure	23	HIGH Alarm	21.0	LOW Alarm	100.0	LOV
	MA107-001176	2008-01-08 16:42:37	Peak Exposure	4		4.0		0.0	LOV
	MA107-001176	2008-01-10 12:24:35	Peak Exposure	19	HIGH Alarm	25.0	LOW Alarm	100.0	LOV
	MA107-001176	2008-01-11 14:09:35	Peak Exposure	8		3.0		0.0	LOV
	MA107-001176	2008-01-11 15:02:57	Peak Exposure	7		9.0	LOW Alarm	37.0	LOV
	MA107-001176	2008-01-11 17:02:20	Peak Exposure	1		2.0		0.0	LOV
	MA107-001176	2008-01-11 17:05:04	Peak Exposure	5		3.0		0.0	LOV
	MA107-001176	2008-01-11 17:10:24	Peak Exposure	3		2.0		0.0	LOV
	MA107-001176	2008-01-14 09:39:37	Peak Exposure	76	HIGH Alarm	25.0	LOW Alarm	100.0	LOV
	MA107-001176	2008-01-14 10:35:21	Peak Exposure	54	HIGH Alarm	25.0	LOW Alarm	100.0	LOV

# Honeywell

- | Logs / Results View  |  | View...      | <Main View        |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
|--|--|--------------|-------------------|---------------|----------|----------|-------------|--------------|---------------------|------------|----------|--------------|---------------------|------------|-----------------|--------------|---------------------|------------|-----------------|--------------|---------------------|------------|----------|--------------|---------------------|------------|-----------------|--------------|---------------------|------------|-----------------|--------------|---------------------|------------|----------|--------------|---------------------|------------|-----------------|--------------|---------------------|------------|-----------------|--------------|---------------------|------------|----------|--------------|---------------------|------------|-----------------|--------------|---------------------|--------------|------------------|--------------|---------------------|--------------|-----------------|--------------|---------------------|--------------|-----------------|--------------|---------------------|--------------|------------------|--------------|---------------------|--------------|-------------------|--------------|---------------------|------------|-------------|--------------|---------------------|--------------|------------------|--------------|---------------------|--------------|-----------------|--------------|---------------------|--------------|-----------------|--------------|---------------------|--------------|------------------|--------------|---------------------|------------|-----------------|--------------|---------------------|------------|----------|--------------|---------------------|------------|-----------------|
| <ul style="list-style-type: none"> <li>GasAlertMicroClip</li> <li>GasAlertMicro S</li> <li>GasAlertMax XT               <ul style="list-style-type: none"> <li>Event Logs</li> <li>Datalogs                   <ul style="list-style-type: none"> <li>MA107-001176                       <ul style="list-style-type: none"> <li>2008-01-14                           <ul style="list-style-type: none"> <li>Bump/Cal Results</li> </ul> </li> </ul> </li> </ul> </li> <li>GasAlertMicro</li> <li>All Results</li> </ul> </li> </ul> | <table> <tr> <th>Serial Number</th><th>Log Time</th><th>Log Type</th><th>Unit Status</th></tr> <tr><td>MA107-001176</td><td>2008-01-14 12:56:38</td><td>Unit Event</td><td>Power Up</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 12:56:51</td><td>Unit Event</td><td>New Location:36</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 12:57:24</td><td>Unit Event</td><td>Manual Shutdown</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:32:02</td><td>Unit Event</td><td>Power Up</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:32:15</td><td>Unit Event</td><td>New Location:36</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:32:43</td><td>Unit Event</td><td>Manual Shutdown</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:45:01</td><td>Unit Event</td><td>Power Up</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:45:14</td><td>Unit Event</td><td>New Location:36</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:45:30</td><td>Unit Event</td><td>Manual Shutdown</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:54:06</td><td>Unit Event</td><td>Power Up</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:54:19</td><td>Unit Event</td><td>New Location:36</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:55:26</td><td>Sensor Event</td><td>H2S Testing Pass</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:55:26</td><td>Sensor Event</td><td>CO Testing Pass</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:55:26</td><td>Sensor Event</td><td>O2 Testing Pass</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:55:26</td><td>Sensor Event</td><td>LEL Testing Pass</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:55:26</td><td>Sensor Event</td><td>Pump Testing Pass</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:55:28</td><td>Unit Event</td><td>IR Download</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:55:31</td><td>Sensor Event</td><td>H2S Zeroing Pass</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:55:31</td><td>Sensor Event</td><td>CO Zeroing Pass</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:55:31</td><td>Sensor Event</td><td>O2 Zeroing Pass</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:55:31</td><td>Sensor Event</td><td>LEL Zeroing Pass</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 13:56:22</td><td>Unit Event</td><td>Manual Shutdown</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 14:01:53</td><td>Unit Event</td><td>Power Up</td></tr> <tr><td>MA107-001176</td><td>2008-01-14 14:02:06</td><td>Unit Event</td><td>New Location:36</td></tr> </table> |              |                   | Serial Number | Log Time | Log Type | Unit Status | MA107-001176 | 2008-01-14 12:56:38 | Unit Event | Power Up | MA107-001176 | 2008-01-14 12:56:51 | Unit Event | New Location:36 | MA107-001176 | 2008-01-14 12:57:24 | Unit Event | Manual Shutdown | MA107-001176 | 2008-01-14 13:32:02 | Unit Event | Power Up | MA107-001176 | 2008-01-14 13:32:15 | Unit Event | New Location:36 | MA107-001176 | 2008-01-14 13:32:43 | Unit Event | Manual Shutdown | MA107-001176 | 2008-01-14 13:45:01 | Unit Event | Power Up | MA107-001176 | 2008-01-14 13:45:14 | Unit Event | New Location:36 | MA107-001176 | 2008-01-14 13:45:30 | Unit Event | Manual Shutdown | MA107-001176 | 2008-01-14 13:54:06 | Unit Event | Power Up | MA107-001176 | 2008-01-14 13:54:19 | Unit Event | New Location:36 | MA107-001176 | 2008-01-14 13:55:26 | Sensor Event | H2S Testing Pass | MA107-001176 | 2008-01-14 13:55:26 | Sensor Event | CO Testing Pass | MA107-001176 | 2008-01-14 13:55:26 | Sensor Event | O2 Testing Pass | MA107-001176 | 2008-01-14 13:55:26 | Sensor Event | LEL Testing Pass | MA107-001176 | 2008-01-14 13:55:26 | Sensor Event | Pump Testing Pass | MA107-001176 | 2008-01-14 13:55:28 | Unit Event | IR Download | MA107-001176 | 2008-01-14 13:55:31 | Sensor Event | H2S Zeroing Pass | MA107-001176 | 2008-01-14 13:55:31 | Sensor Event | CO Zeroing Pass | MA107-001176 | 2008-01-14 13:55:31 | Sensor Event | O2 Zeroing Pass | MA107-001176 | 2008-01-14 13:55:31 | Sensor Event | LEL Zeroing Pass | MA107-001176 | 2008-01-14 13:56:22 | Unit Event | Manual Shutdown | MA107-001176 | 2008-01-14 14:01:53 | Unit Event | Power Up | MA107-001176 | 2008-01-14 14:02:06 | Unit Event | New Location:36 |
| Serial Number  | Log Time   | Log Type     | Unit Status       |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 12:56:38  | Unit Event   | Power Up          |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 12:56:51  | Unit Event   | New Location:36   |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 12:57:24  | Unit Event   | Manual Shutdown   |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:32:02  | Unit Event   | Power Up          |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:32:15  | Unit Event   | New Location:36   |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:32:43  | Unit Event   | Manual Shutdown   |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:45:01  | Unit Event   | Power Up          |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:45:14  | Unit Event   | New Location:36   |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:45:30  | Unit Event   | Manual Shutdown   |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:54:06  | Unit Event   | Power Up          |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:54:19  | Unit Event   | New Location:36   |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:55:26  | Sensor Event | H2S Testing Pass  |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:55:26  | Sensor Event | CO Testing Pass   |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:55:26  | Sensor Event | O2 Testing Pass   |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:55:26  | Sensor Event | LEL Testing Pass  |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:55:26  | Sensor Event | Pump Testing Pass |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:55:28  | Unit Event   | IR Download       |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:55:31  | Sensor Event | H2S Zeroing Pass  |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:55:31  | Sensor Event | CO Zeroing Pass   |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:55:31  | Sensor Event | O2 Zeroing Pass   |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:55:31  | Sensor Event | LEL Zeroing Pass  |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 13:56:22  | Unit Event   | Manual Shutdown   |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 14:01:53  | Unit Event   | Power Up          |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |
| MA107-001176   | 2008-01-14 14:02:06  | Unit Event   | New Location:36   |               |          |          |             |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |              |                   |              |                     |            |             |              |                     |              |                  |              |                     |              |                 |              |                     |              |                 |              |                     |              |                  |              |                     |            |                 |              |                     |            |          |              |                     |            |                 |

# Service Advantages

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**Honeywell**

- Battery is user/distributor serviceable
- Pump is user/distributor serviceable
- Rugged bass fittings and machine screws to prevent stripping
- Armored charger pins
- Inline pump filtration

Rev 1



# Error Codes

Code	Meaning	Cause	Recovery
14	Memory corruption on configuration options and/or calibration information	This error has only been seen with power-related issues - either a low battery or having the battery pulled while the unit is saving its settings	Instrument will automatically reset all settings back to factory defaults. To reconfigure the instrument use Fleet Manager II. Calibration is required after this error
15	Watchdog error	Code is stuck in an infinite loop and reset itself	None required
16	RAM failure	Bad processor	Replace processor
17	Program CRC mismatch	Bad code in processor	Reprogram processor - through IR if possible otherwise it may need to be reprogrammed through JTAG interface
22-28	Processor errors	Processor anomaly	Replace processor
32	DataFlash error	Unable to communicate the DataFlash for logging or retrieving configuration options	Replace DataFlash
33	Timer error	Coding error	Report to BW
34	SPI error	Likely a DataFlash communication issue	Power-cycle unit. If error continues, try replacing DataFlash
35	Clock error	RTC communication issue or the coin cell battery is too low	Replace coin cell or RTC
36	TWI error	Coding error	Report to BW
37	RDAC error	Unable to communicate with the RDAC	Replace RDAC

# Parts List

**Honeywell**

Description	Max XT	Max XT II
O2 sensor	SR-X-MC	SR-X10-C1
CO sensor	SR-M-MC	SR-M-MC
H2S	SR-H-MC	SR-H-MC
LEL	SR-W-MP75C	SR-W-MP75C
Sensor Screen (kit of 2)	XT-SS	XT-SS-1
Sensor Screen (kit of 10)	XT-SS-K1	XT-SS-2
Main PCB - replacement	XT-MPCB1	XT-MPCB2
Front Shell - Yellow	XT-FC1	XT-FC1-1
Back Shell - Yellow	---	XT-BC1
Front Shell - Black	XT-FC1B	XT-FC1B-1
Back Shell - Black	---	XT-BC1B
Replacement Battery	XT-BAT-K1	XT-BAT-K1
Replacement Pump	XT-RPUMP-K1	XT-RPUMP-K1
Hydrophobic filter kit of 5	XT-RF-H5	XT-RF-H5
Particulate Filter kit of 5	GA-PFMAX-5	GA-PFMAX-5
Auxiliary Filter kit of 5	M5-AF-K2	M5-AF-K2
Max XT II upgrade kit yellow	XT-XWHM-Y-NA-K	N/A
Max XT II upgrade kit Black	XT-XWHM-B-NA-K	N/A

Rev 1



# GasAlert Quattro Overview

Honeywell

- Introduction
- Assembly Procedure
- Troubleshooting
- Calibration Guide
- Bump Check Guide
- MicroDock II Quattro Module
- IR Link
- Fleet Manager II
- Questions



Rev 1

**BW**  
Technologies  
by Honeywell



# Introduction

Honeywell

- Launch Date: Monday, October 26th, 2009
- Similarities with previous BW products
  - Interchangeable power options like Micro and Micro 5
    - Alkaline (3 AA batteries) and Rechargeable Lithium-Polymer (LiPo)
  - Single Button operation like MicroClip and Max XT
  - No pump attachment like MicroClip and Micro
  - Data logging capability
  - Same Chargers as MicroClip and Max XT
- New Features
  - Large full display LCD
  - IntelliFlash – Visual confidence indicator
  - REFLEX® – built-in electronic bump testing



Rev 1

**BW**  
Technologies  
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# Introduction

- Sensors
  - 4-Series
  - No COSH Sensor
  - Same Default Alarm Set points

P/N	Sensor	Brand	Range	Resolution
SR-H04-SC	H <sub>2</sub> S	Sixth Sense	0-200 ppm	0.1 ppm
SR-M04-SC	CO	Sixth Sense	0-1000 ppm	1 ppm
SR-W04-75C	LEL	City 4P-75C	0-100% LEL	1.0% LEL
			0-5% /Vol. CH <sub>4</sub>	0.1% CH <sub>4</sub>
SR-X10-C1	O <sub>2</sub>	Alpha Sense	0-30.0%	0.1%



# Assembly Procedure

Honeywell

- Standard unit includes
  - Monitor
  - Sensors
  - Calibration adaptor and hose
  - User manual
  - Technical manual and Technical Documentation CD
  - Power cord (rechargeable only)
  - Alkaline tray with 3 AA Alkaline (alkaline only)
  - Screwdriver for battery screw and routine maintenance
- Kits available
  - Connectivity Kit (IR Link and Fleet Manager II 2.3)
  - Confined Space Kit (Deluxe and Standard)

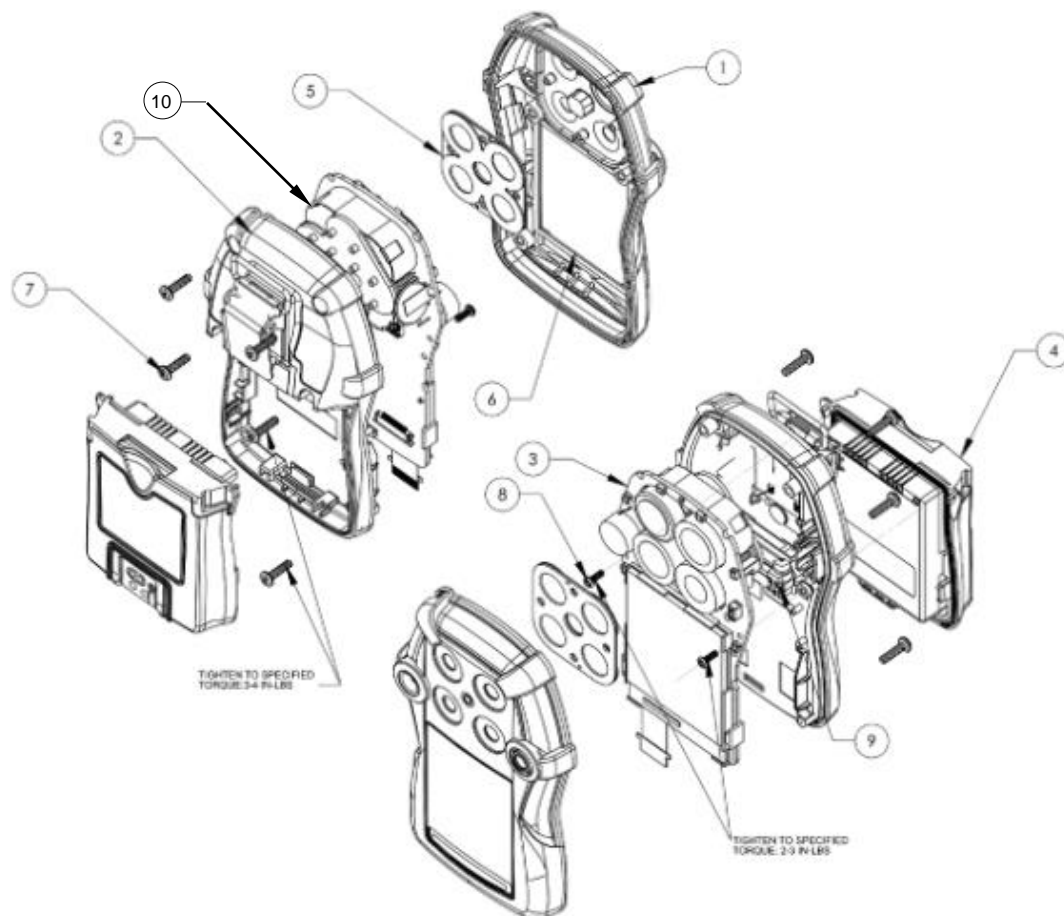


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# Assembly Procedure

**Honeywell**



1	Front Shell	QT-FC1 QT-FC1B
2	Back Shell	QT-BC1 QT-BC1B
3	Main Board	QT-MPCB1
4	Battery Pack	QT-BAT-A01 QT-BAT-R01
5	Sensor Gasket	QT-SS QT-SS-K1
6	LCD Gasket	QT-LCD-K1
7	Screw #4-40 x 7/16"	QT-SCREW-K1
8	Screw #2-56 x 1/4"	
9	Motor	GA-VM-2
10	Sensor Board	QT-SPCB1

Rev 1

# Spare Parts

Order #	Description
QT-SS	Sensor Screen Filters, kit of 2
QT-SS-K1	Quad Sensor Screen Filters, kit of 10
QT-BC1	Replacement back enclosure (yellow)
QT-BC1B	Replacement back enclosure (black)
QT-FC1	Replacement front enclosure (yellow)
QT-FC1B	Replacement front enclosure (black)
XT-AG-1	Replacement Alligator Clip, Stainless steel with screw
QT-LCD-K1	Replacement LCD kit for GasAlertQuattro
QT-PCB-K1	Replacement PCBs for GasAlertQuattro
SR-H04-SC	Replacement Hydrogen Sulfide (H <sub>2</sub> S), SureCell H <sub>2</sub> S (M), 4 series
SR-M04-SC	Replacement carbon monoxide (CO) SureCell CO, 4 series
SR-X10-C1	Replacement oxygen (O <sub>2</sub> ) sensor
SR-W04-75C	Replacement combustible sensor with heavy duty silicone filter
GA-VM-2	Replacement Vibrating Motor for GasAlertQuattro
QT-TC-1	GasAlertQuattro test cap and hose (0.3 m/1 ft.)

# Assembly Procedure

- Disassembly
  - When unit is off, remove battery pack
    - NOTE: Removing battery pack while unit is on will corrupt the clock

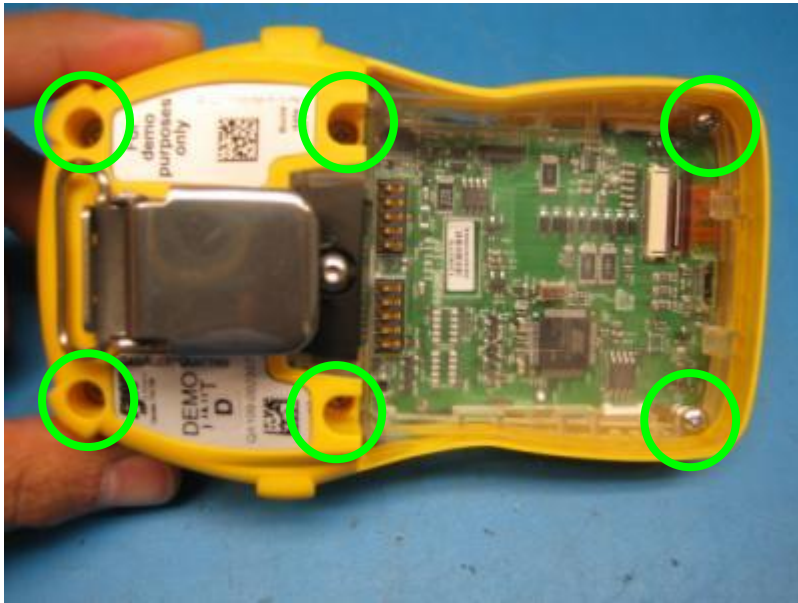




# Assembly Procedure

Honeywell

- Disassembly (cont'd)
  - Remove 6 screws
  - Pull off front shell and sensor gasket





# Assembly Procedure

Honeywell

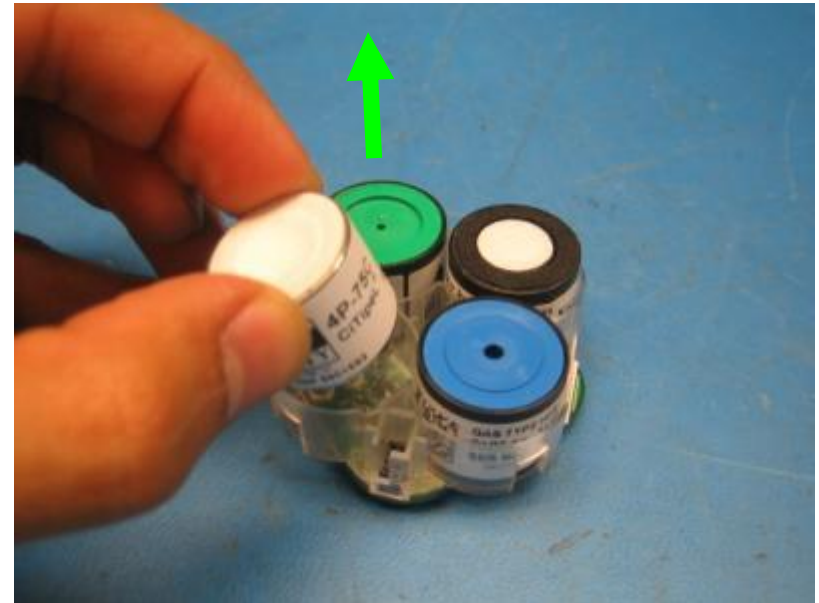
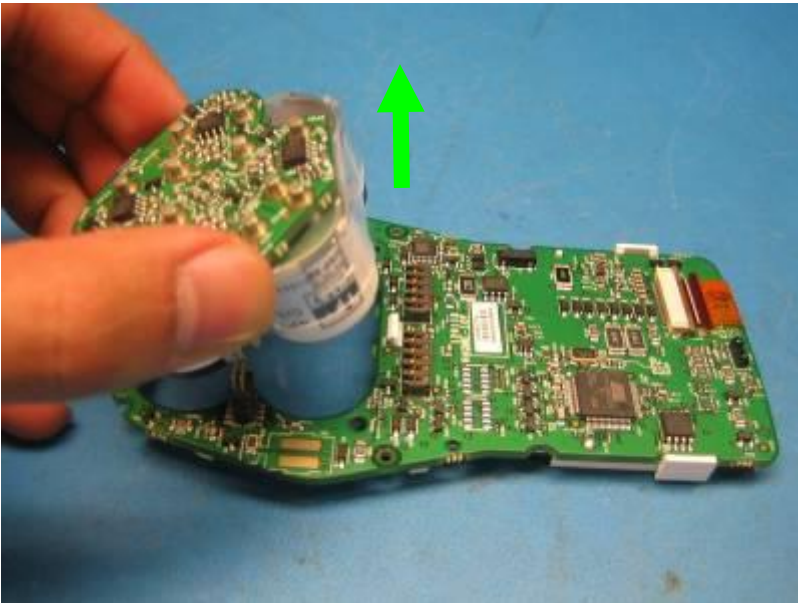
- Disassembly (cont'd)
  - Remove 2 smaller screws
  - Pull off back shell



# Assembly Procedure

Honeywell

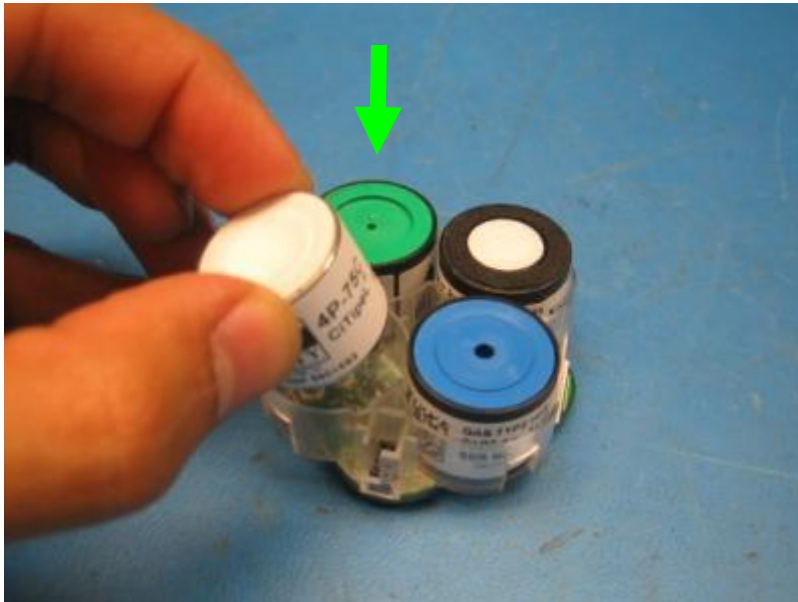
- Disassembly (cont'd)
  - Carefully pull off sensor board
  - Remove sensor(s)



# Assembly Procedure

Honeywell

- Reassembly
  - Install sensor(s)
  - Carefully connect sensor board to main board
    - Notice connectors are orientated differently that it only be connected one way



# Assembly Procedure

Honeywell

- Reassembly (cont'd)
  - Place boards in back shell
  - Install 2 smaller screws



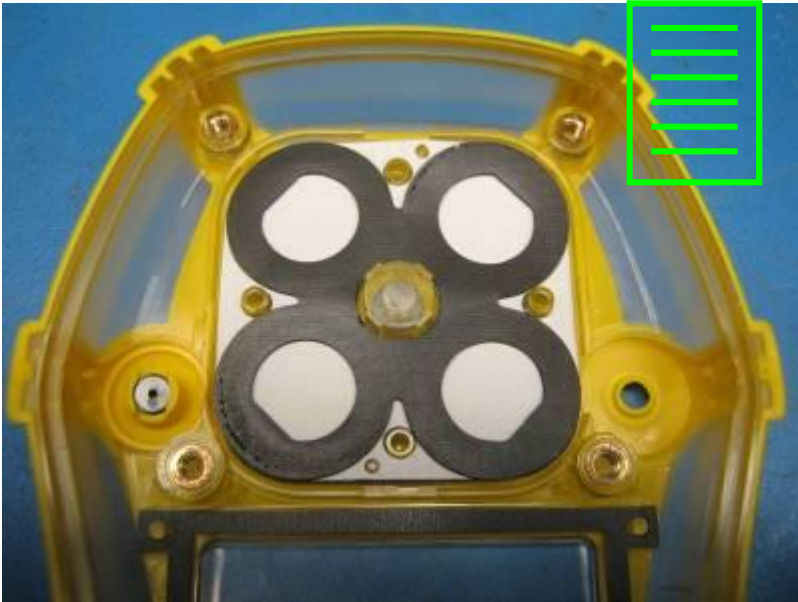
Rev 1



# Assembly Procedure

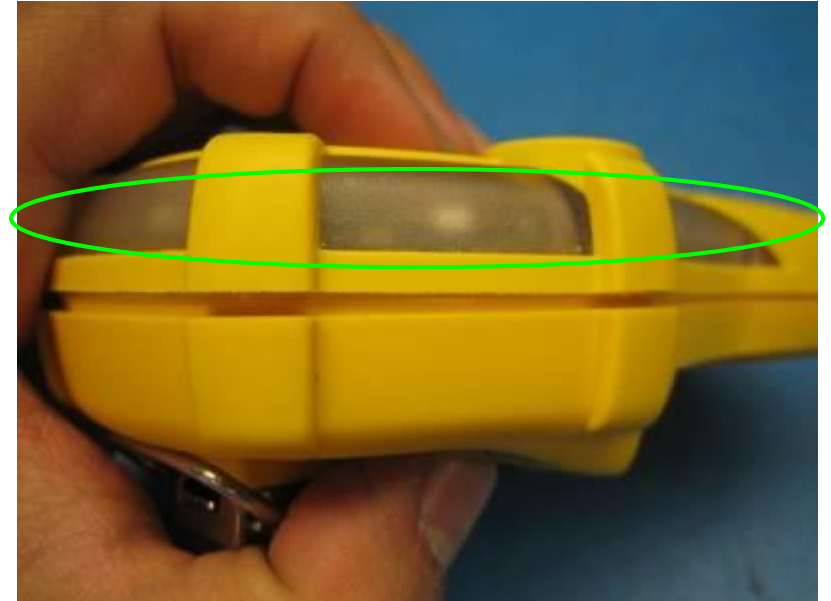
Honeywell

- Reassembly (cont'd)
  - Place sensor gasket on front shell
    - Line up gasket holes with posts on front shell



# Assembly Procedure

- Reassembly (cont'd)
  - Place front shell on back shell and boards
    - Ensure rubber doesn't get pinched between front and back shells

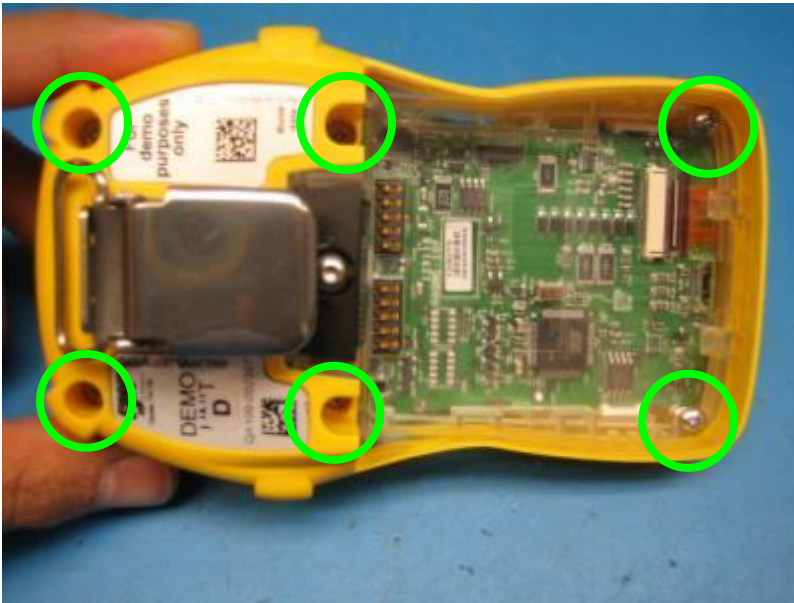


# Assembly Procedure

Honeywell

- Reassembly (cont'd)
  - Install 6 screws

- Install battery pack





# Troubleshooting

Honeywell

Beeper does not sound	Visually check beeper cavity. Replace beeper should solve problem. Replace main board if problem persists.
Vibrator does not work	Visually check vibrator condition and contact pads on main board. Replace vibrator or main board to solve problem.
LCD does not work properly	Visually check LCD glass/cable and connector on main board. Replace LCD or main board to solve problem.

- Manual Calibration
  - Must use 4-Gas Mix with 18% O<sub>2</sub> (like Max XT)
    - Calibration span for O<sub>2</sub> has limited range of 10.0% to 19.0%
    - Mixes with 20.9% will not work
  - Similar to MicroClip and Max XT
    - Hold blue button for several seconds to get into Calibration Mode
    - Let unit Auto-Zero
    - Apply calibration gas through calibration adaptor and hose with 4-Gas Mix

# Bump Check Guide

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Honeywell

- O2 Breath Test
  - Similar to other BW products
    - Blow into sensor heads
    - Ensure O2 reading drops and goes into Low Alarm
- Manual Bump Check
  - Similar to other BW products
    - Apply 4-Gas Mix to unit through calibration adaptor and hose
    - Ensure all sensors go into Low Alarm

Rev 1

# MicroDock II Quattro Module

Honeywell

- Physically similar to Micro 5 Module
- Functionality similar to MicroClip Module
  - Bump Check
  - Calibration
  - Data Transfer
    - Base station will store up to 10 (ten) 1MB Quattro and/or Extreme Datalogs
    - Can take up to 20 minutes depending on size of datalog
  - Charge
    - Same method as MicroClip and Max XT – MicroDock II is turned ON and Quattro unit is turned OFF
    - Able to charge LiPo Battery Packs independent of Quattro unit



Rev 1

# MicroDock II Quattro Module

Honeywell

- Quattro Module Firmware: GAQF1\_01
  - Upgrading the firmware will require JTAG programmer
    - Will be shipped by request when first FW revision is released
- Base Station Firmware: M2BF-02W
  - Field Upgrade Card (13L+02W) will be available
  - Separate cards for use with PIC programmer for 13L and 02W will be available by request



Rev 1

# IR Link

Honeywell

- Same Order Number (GA-USB1-IR)
- Works in Windows XP and later 32 bit systems
  - If using Windows XP SP2 and older
    - To maximize data transfer speed install Windows Hotfix
      - WindowsXP-KB943198-v2-x86-ENU, available from Microsoft website)
- Backwards compatible with MicroClip and Max XT
  - Old IR Link does not work with Quattro



Rev 1

# Fleet Manager II

- Quattro-related features added (cont'd)

The screenshot displays two windows from the Fleet Manager II software. The 'Device Selection' window on the left has four radio buttons: 'GasAlertMicroClip', 'GasAlertMax XT', 'GasAlertQuattro' (which is selected and highlighted with a dashed border), and 'IR Link'. It includes 'OK' and 'Cancel' buttons at the bottom. The 'GasAlertQuattro Configuration' window on the right is divided into 'User Options' and 'Sensor Configuration' tabs. The 'User Options' tab contains fields for 'Serial Number', 'Firmware Version', and 'Hardware Version', a 'Startup Message' text area, and a list of checkboxes for 'Lockout on Self-Test Error', 'Safe Mode', 'Stealth Mode', 'Flip Display', 'Force Bump', 'Force Calibration', 'Cal IR Lock', 'Latching Alarms', 'IntelliFlash' (checked), 'Confidence/Compliance Beep', 'Confidence/Compliance Beep Interval (seconds):' (10), 'IntelliFlash Interval (seconds):' (1), 'Datalog Interval (seconds):' (15), and 'Language:' (English). The 'Sensor Configuration' tab shows settings for 'H2S', 'CO', 'O2', and 'LEL', with a sub-section for 'Hydrogen Sulfide (H2S)' containing fields for 'Sensor Disabled' (unchecked), 'Calibration Gas (ppm):' (25.0), 'Calibration Interval (days):' (180), 'Bump Interval (days):' (0), 'Low Alarm (ppm):' (10.0), 'High Alarm (ppm):' (15.0), 'TWA Alarm (ppm):' (15.0), 'STEL Alarm (ppm):' (10.0), 'STEL Interval (minutes):' (15), 'TWA Period (hours):' (8), 'TWA Method:' (OSHA), 'Auto-Zero on Start-up' (checked), and 'Low Alarm Acknowledge' (unchecked). At the bottom of the configuration window are buttons for 'Save To Device', 'Retrieve From Device', 'Save To File', 'Load From File', 'Exit', 'Set Device Time', 'Calibrate', 'Bootloader', and 'Reset Logs'.



# MicroDock II

Honeywell

- MicroDock II calibration, test and record storage system
  - Automatic calibration and bump-testing
    - GasAlertMicro
    - GasAlert Extreme
    - GasAlertClip Extreme
  - Expandable to include up to 10 docking modules
  - Maximum 6 charger modules for GasAlertMicro



Rev 1

# MicroDock II

Honeywell

- Fully automatic calibration and functional bump test
- Automatically verifies performance of audible and visual alarms
- Stores and updates calibration records
- No computer required
- Entirely self-contained
- Fully portable
- Operates via line power or four C-cell batteries

















Rev 1

# MicroDock II User Options

Honeywell

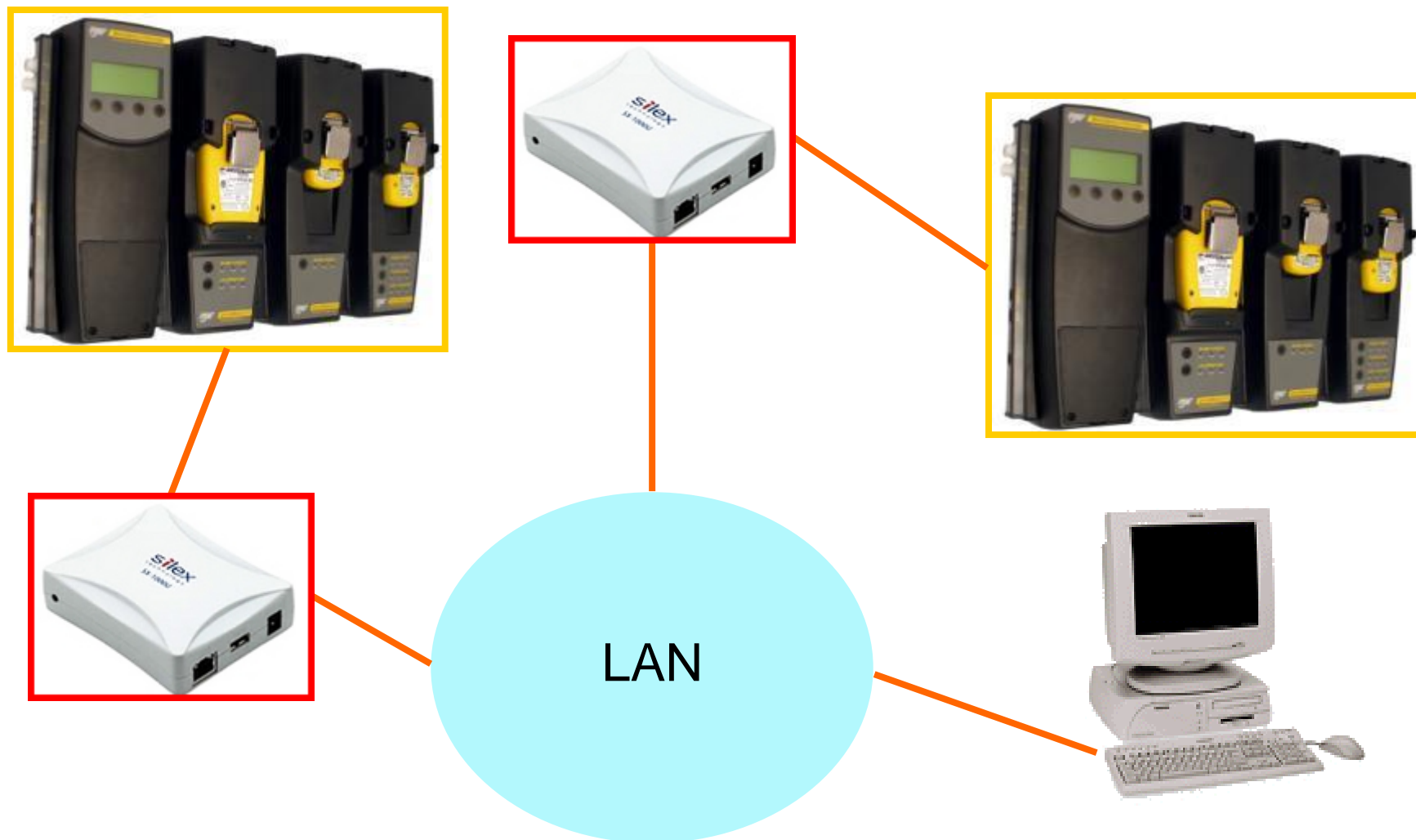
<pre>09/16/04 14:57 1 mm/dd/yy hh:mm d d=day (1=Mon) ^ sel exit</pre>	<p>This option allows you to modify the time and date of your Station.</p>	<pre>Station U.A M1 U.A M2 U.A M3 U.A M4 U.A more exit</pre>	<p>This option displays the software version of the Station and each individual docking Module.</p>
<pre>1→Purge 0020.90% - v sel exit &gt;</pre>	<p>This option allows you to enter the gas type concentration and user defined field.</p> <p>For Inlet 2, press <b>^</b> or <b>v</b> to choose desired gas and press <b>sel</b> <b>○</b> to navigate to the concentration. Press <b>exit</b> <b>○</b> to save.</p>	<pre>Format MMC? All data will be erased Yes No</pre>	<p>This option allows you to format an MMC card at anytime from the menu. All data will be erased.</p>
<pre>Pump Setup ^ exit v</pre>	<p>This option controls the Station's pump speed by using the up or down arrows. The Station is factory set and recommended at 350 ml/min. Pump speed only needs to be modified if more modules are added</p>	<pre>Format MMC →Inlet Sel: auto Pass Code ^ sel exit v</pre>	<p>This option allows you to select your gas inlet. If <b>auto</b> is chosen, the Station will automatically select the correct gas bottle for the test</p>
<pre>Contrast ^ reset exit v</pre>	<p>This option allows you to adjust the LCD contrast by pressing <b>^</b> or <b>v</b>.</p>	<pre>Format MMC Inlet Sel →Pass Code: X ^ sel exit v</pre>	<p>Pass code protection prevents unauthorized access to the user option menu. <b>ⓘ</b> is lit on a pass code protected unit.</p>
<pre>Contrast →Backlight: ✓ About ^ sel exit v</pre>	<p>This option allows you to adjust the lighting of the LCD. To toggle through on, off, and auto mode, press <b>sel</b> <b>○</b></p>	<pre>→English Francais Deutsch ^ sel exit v</pre>	<p>The Station is shipped with English as the default language. Press <b>^</b> or <b>v</b> to choose the desired language and press <b>sel</b> <b>○</b> to select.</p>

Rev 1

Icon	Function
	Alternating current
	Batteries full
	Batteries half-charged
	Batteries depleted
	MultiMediaCard (MMC)
	MultiMediaCard (MMC) not installed
	Test pass
	Test fail
	Time/date pointer
	Scroll up
	Scroll down
	Selection arrow
	Selected feature
	Pass Code Protected

# MicroDock II LAN Connection

Honeywell



Rev 1

# MicroDock II

Honeywell

- Complete MicroDock II Portable Calibration System Kit
- One, Two or Three-module MicroDock system
- Heavy Duty waterproof case for complete system and all accessories.



Rev 1



# Card-based firmware Upgrades

- Enter user options
  - Check firmware revision
    - If 02H, or later upgrade using MMC upgrade card
    - At this time current firmware revision is 02W
  - Power down MicroDock II
  - Open battery hatch on main module and remove MMC card
  - Install 02W upgrade MMC card
  - Power up MicroDock II
  - Enter passcode 532 and allow upgrade to complete



# Upgrading Modules

Honeywell

- Firmware upgrade on slave docking module:
  - If docking module is attached to the Master (base) Module
    - Power system OFF and remove power cable from docking station
  - Remove "Warranty Void if Removed" label from bottom of docking module
  - Assemble PIC Programmer and adapter cable
    - Cable only fits one way
  - Insert appropriate MMC in PIC Programmer
  - Turn PIC Programmer ON by pressing Power (I) button on PIC programmer
    - Power LED will illuminate green
  - Insert other end of programming cable into connector on MicroDock II made accessible by removing "Warranty Void if Removed" label

Module	Firmware Revision
M5	GMCF-02A
GAMIC	CSSF-20D
GAXT	CSXF-01D
MC	CSGF-10A
CLIPXT	GMCF-01A

Rev 1

# Module Upgrades

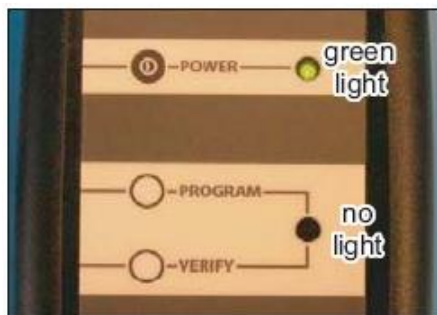
**Honeywell**

- Observe polarity
  - Pin 1 on cable - marked with arrow or triangle corresponds to pin 1 on MicroDock II - marked with dot on housing
- NOTE:
  - Reversing cable polarity will cause fuse inside PIC Programmer to blow - rendering programmer unusable.
- Press PROGRAM button on PIC Programmer
  - Program/Verify LED will blink red and green
  - When completed - LED will blink green only
  - Blinking red indicates programming failure
- Only after green LED blinks - remove programming cable from MicroDock II module
- Replace "Warranty Void if Removed" label

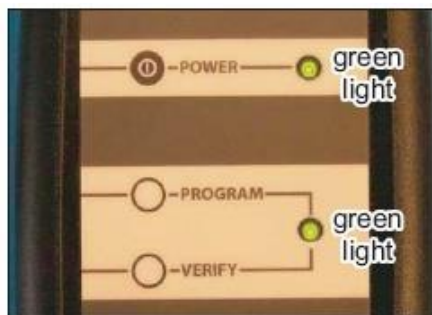
Module	Firmware Revision
M5	GMCF-02A
GAMIC	CSSF-20D
GAXT	CSXF-01D
MC	CSGF-10A
CLIPXT	GMCF-01A

# Pic Programmer Main Module Upgrades

Honeywell



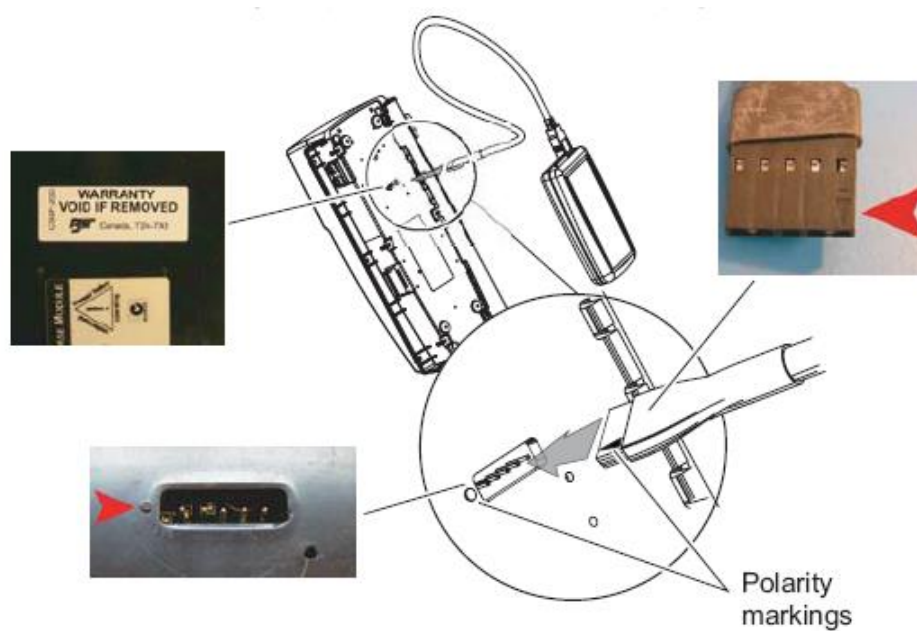
Programmer ON



Pass



Error



Rev 1

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# Pic Programmer Main Module Upgrades

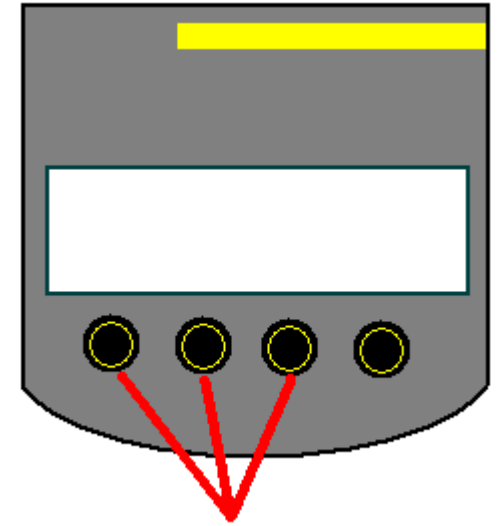
Honeywell

- Firmware versions older than 02I
  - Pic programmer required to upgrade
  - Insert card labeled M2BF-13L into programmer
  - Remove warranty label on dock
  - Connect programmer to dock
    - Note polarity
  - Program until programmer LED shows green
  - Power up dock and wait for loading
- When complete
  - Power off dock
  - Insert card labeled M2BF-02W into programmer
  - Program until programmer LED shows green
  - Power up dock
  - Program serial number and number of inlets using factory options

# MicroDock II Factory mode

Honeywell

- Factory Mode used to update inlet configurations after a firmware update
- To enter factory mode
  - Press and hold two center buttons on main module
  - Then press left most button and hold all three



- Primary reason for module initialization is new module installation
  - Initialization has been proven to be a fix for many docking station problems
- To initialize:
  - Power down docking station
  - Attach module
    - Ensure both gas and electrical connections are made
  - Press and hold bump check button on newly added module
    - Then press and hold left most or power button on Main Module
  - After a few seconds message “New receptacle added at position \_\_\_\_” will appear
  - Closest module to main is 1 and so on

- If a dock is experiencing problems
  - Check firmware revisions in user options for strange characters or missing modules
    - Inside firmware user options screen there should be one line for main module and one for each dock module
- Initialization has one limitation, only distal module can be initialized
- If you are working on a dock with 5 instrument modules and the first module is having problems you will have to remove the other 4 initialize the first, attach the second initialize and so forth.



# MD2 Limitations

Honeywell

- CL2 can be used for bump tests but cannot be used for calibration
- CLO2 and O3 cannot be tested using the docking station
- Only one instrument can be bumped or calibrated at a time
- The Fleetmanager2 options for BUMP on insertion and calibrated due sensors are still in progress

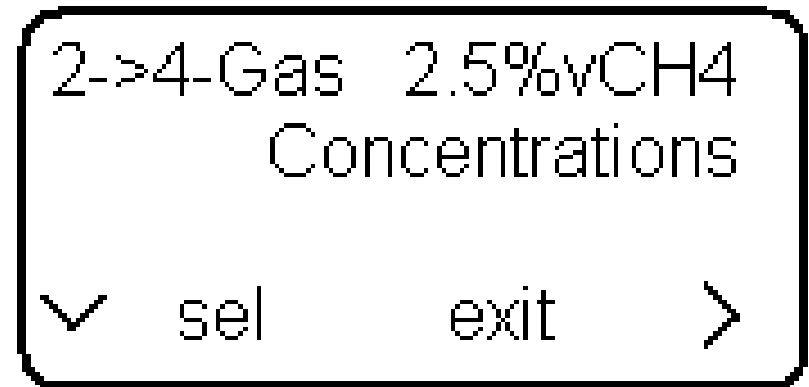
Rev 1

# Dock Troubleshooting guide


# Inlet setup

Honeywell

- “2” the inlet number you are working on
- “4-Gas 2.5%vCH4” the gas or mix of gasses currently selected
- “Concentrations” this is where the ppm %vol. is configured, if you need a special configuration with multi-gas use custom 2 3 4 and 5
- “->” is the cursor which field you are working on
- “V and >” use this to move the cursor
- “sel” allows you to edit a particular field
- “Exit”
- Blank line, this is where the tank number is to be entered



- The most common 4 gas mix is: CG-Q34-4
- 18% Oxygen
- 2.5% Methane
- 100ppm Carbon Monoxide
- 25 ppm H2S

Rev 1

# Fleet Manager2 Data logging Software

Honeywell

**Fleet Manager II**

File Help

**Devices**

- Import
- Logs / Results
- Reports

**Database**

**Administration**

**Logs / Results View**

View... <Main View> Filter... <No Filter Applied>

Test Date Time	Serial Number	Test	Test Result	Device User	Supervisor	Device Status	Unit Programmed	Device Type
2008-03-28 10:01:43	KA207-0015234	Bump Test	Pass			Active	N/A	GasAlertMicroClip
2008-04-07 14:46:59	KA106-0032892	Bump Test	Pass			Active	N/A	GasAlertMicroClip
2008-04-07 15:21:12	KA106-0032892	Bump Test	Pass			Active	Pass	GasAlertMicroClip
2008-04-07 15:29:09	KA106-0032892	Bump Test	Fail			Active	Pass	GasAlertMicroClip
2008-04-07 15:34:05	KA106-0032892	Calibration	Fail			Active	Pass	GasAlertMicroClip
2008-04-07 15:37:14	KA207-0015234	Bump Test	Fail			Active	Pass	GasAlertMicroClip
2008-04-07 15:42:04	KA207-0015234	Calibration	Pass			Active	Pass	GasAlertMicroClip
2008-04-07 15:45:07	KA207-0015234	Bump Test	Pass			Active	Pass	GasAlertMicroClip
2008-04-07 15:48:56	KA106-0032892	Bump Test	Fail			Active	Pass	GasAlertMicroClip
2008-05-08 10:40:39	1414141	Bump Test	Fail			Active	No	GasAlertMicro
2008-05-08 10:41:55	KA207-040650	Bump Test	Pass			Active	N/A	GasAlertMicroClip
2008-05-08 11:05:28	1414141	Calibration	Pass			Active	No	GasAlertMicro
2008-05-08 11:06:57	KA207-040650	Bump Test	Pass			Active	N/A	GasAlertMicroClip
2008-05-08 11:08:03	1414141	Bump Test	Fail			Active	No	GasAlertMicro
2008-04-02 08:22:55	KA207-055217	Calibration	Fail			Active	N/A	GasAlertMicroClip
2008-04-02 08:31:11	KA207-055217	Bump Test	Fail			Active	N/A	GasAlertMicroClip
2008-04-02 08:35:28	KA207-055217	Calibration	Fail			Active	N/A	GasAlertMicroClip
2008-04-02 08:47:58	KA207-055217	Bump Test	Fail			Active	N/A	GasAlertMicroClip
2008-04-02 08:52:25	KA207-055217	Calibration	Fail			Active	N/A	GasAlertMicroClip
2008-04-02 09:02:21	KA207-055217	Calibration	Fail			Active	N/A	GasAlertMicroClip
2008-04-02 09:21:30	KA106-0032892	Calibration	Pass			Active	N/A	GasAlertMicroClip
2008-04-02 09:34:13	KA207-055217	Bump Test	Pass			Active	N/A	GasAlertMicroClip
2008-04-02 09:38:17	KA207-055217	Calibration	Pass			Active	N/A	GasAlertMicroClip
2008-04-02 09:43:49	KA207-055217	Calibration	Pass			Active	N/A	GasAlertMicroClip
2008-04-07 16:00:08	0428466	Bump Test	Fail			Active	No	GasAlertMicro
2008-04-07 16:02:25	0423358	Bump Test	Pass			Active	No	GasAlertMicro
2008-04-07 16:05:10	0423358	Bump Test	Pass			Active	No	GasAlertMicro
2008-04-15 12:39:47	SE105-026042	Bump Test	Pass			Active	N/A	GasAlertMicro 5
2008-04-15 12:41:36	0501445	Bump Test	Pass			Active	No	GasAlertMicro
2008-04-15 12:43:14	SE105-025241	Bump Test	Pass			Active	N/A	GasAlertMicro 5
2008-04-15 13:17:39	HM07-H085723	Bump Test	Pass			Active	No	GasAlertClip Extr
2008-04-15 13:20:33	H305-H198298	Bump Test	Pass			Active	No	GasAlertClip Extr
2008-04-16 08:23:14	KA208-995009	Bump Test	Pass			Active	N/A	GasAlertMicroClip
2008-04-16 08:24:23	KA208-995001	Bump Test	Pass			Active	N/A	GasAlertMicroClip
2008-04-16 08:25:11	KA208-995003	Bump Test	Pass			Active	N/A	GasAlertMicroClip
2008-04-16 08:26:00	KA208-995005	Bump Test	Pass			Active	N/A	GasAlertMicroClip
2008-04-16 08:27:06	KA208-995006	Bump Test	Pass			Active	N/A	GasAlertMicroClip
2008-04-16 08:28:24	KA208-995011	Bump Test	Pass			Active	N/A	GasAlertMicroClip
2008-04-16 08:29:14	KA208-995008	Bump Test	Pass			Active	N/A	GasAlertMicroClip
2008-04-16 08:29:58	KA208-995007	Bump Test	Pass			Active	N/A	GasAlertMicroClip
2008-04-16 08:30:49	KA208-995010	Bump Test	Pass			Active	N/A	GasAlertMicroClip
2008-04-16 08:31:42	KA208-995004	Bump Test	Pass			Active	N/A	GasAlertMicroClip
2008-04-16 08:33:02	KA208-995013	Bump Test	Pass			Active	N/A	GasAlertMicroClip
2008-04-16 08:34:10	KA208-995014	Bump Test	Pass			Active	N/A	GasAlertMicroClip
2008-04-16 08:37:27	KA208-995002	Bump Test	Pass			Active	N/A	GasAlertMicroClip

Number of records: 89 (displayed out of 89 records)

Certificate Export Settings...

Rev 1

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# Fleet Manager 2

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Honeywell

- FleetManager 2 is as simple as....
- Import records from the MicroDock2s connected
- Test a detector
- Browse the Bump and Calibration data for fails
- Generate a report of a failed bump test or calibration
- Generate Calibration Certificates

Rev 1



# Fleet Manager 2 Hands on

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Honeywell

- Import from a file
- Look at bump results
  - Create a view
  - Create a filter
  - Create a calibration certificate
  - Export to Excel
- Look at data logs
- Assign a user name
- Run a report
- Change device configuration

Rev 1

# Questions

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**Honeywell**

Rev 1





The logo is contained within a yellow oval with a black border and a 3D effect. The text "BW Technologies" is in a large, bold, black sans-serif font. The "B" is stylized with a horizontal bar at the bottom. Below "Technologies" is the text "by Honeywell" in a smaller, black sans-serif font.

**BW**  
**Technologies**  
by Honeywell